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# Monitoring Times

Your Personal  
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## **MT reviews:**

- Icom R75
  - Uniden BC245XLT
- plus**
- Trunking Tips



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## Cover Story

### DXing Latin America by Air

By Don Moore

Looking for something different to monitor this DX season? One of the biggest concentrations of short-wave aeronautical stations is right on our southern doorstep – in Latin America. Catching domestic short-wave communications from the southern hemisphere can be as challenging as landing an aircraft in the mountainous terrain or faceless jungle of many Latin American air-strips.

The coming winter months will provide your best chance to land a DX catch. Start with one of the easier ones. Monitoring a major world air route frequency (MWARA) could net you a pilot threading his way into Simon Bolivar International Airport, which serves the busy city of Caracas, Venezuela, pictured on our cover. (Images® copyright 1999 Photo Disc, Inc.) Story starts on page 8.

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By Ian McFarland

After three attempts in seven years to shut it down, Canada's never-say-die radio voice can finally anticipate a rosier and more stable future, says executive director Bob O'Reilly. The incredible story of the RCI phoenix is recounted by former producer and program host Ian McFarland.

### Tracker Tips ..... 18

By Laura Quarantiello and Larry Van Horn

With the introduction of trunk tracking scanners in 1997, the scanning hobby entered a new era, but not all users have found the transition an easy one. Quarantiello and Van Horn address some of the more common errors and their solutions – including operation tips for the newest trunk tracker on the scene – the Uniden BC245XLT.



### Tape Recording from the Radio ..... 22



By Douglas Blakeslee

It's not rocket science, but still, the act of connecting a tape recorder to a radio can produce some disappointing results. Whether recording for program content, catching an elusive station identification, or using the tape recorder for unattended operation, these hints and circuits will help.

## Reviews:

Here they are: the reviews you've been asking for! The **Uniden BC245XLT TrunkTracker II** scanner (reviewed by Bob Parnass on p.92) and the **Icom R75**

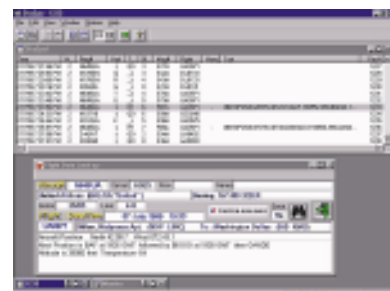


shortwave receiver (reviewed by Lawrence Magne on p.90) have been the most-anticipated receivers in some time – and for good reason.

For folks monitoring an Ericsson system using the Optocom, the **E-Trax** program is reviewed on page 96.



Other reviews: **Maxon GMRS 21X** receiver (p.87); **Flight Database Plus**, an accessory for monitoring ACARS transmissions (p.88); and **Uniden's SQ-590** satellite receiver (p.66). See *On the Ham Bands* and *KIS Radio* for other equipment recommendations.







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By Fred Maia, W5YI  
fmaia@cwixmail.com

# Low Power FM Broadcasting Creates Uproar

**T**he public comment period has closed on the FCC's January 1999 proposal to create a low power broadcasting service. The FCC wants to introduce up to three new classes of low power FM broadcast stations. Each would have a different power level: 1000 watt (called: LP1000), 100 watt (LP-100) or 10 watts (LP10). The low-tech 100 and 10 watt FM stations would be ideal for churches, schools and local entrepreneurs who would be able to speak to their communities.

The 1,000-watt stations could service areas within a radius of approximately nine miles. The 100-watters would have a range of three or four miles with microradio stations at one to ten watts covering about a four square mile area. The LP100 and micropower stations would be considered "secondary"; that is they could not cause interference to existing FM stations nor would they be protected from interference caused by these stations.

Judging from the comments that have poured into the FCC, it is shaping up to be a showdown between the "haves" and the "have-nots."

Even though the airwaves are public property, the "haves" – as represented by the National Association of Broadcasters – for all practical purposes "own" the broadcast airwaves. Unless you have tens of thousands of dollars, it is very difficult for the general public to obtain a broadcast license since the startup costs necessary to meet the FCC's minimum technical requirements are sky high.

That virtually shuts out the ordinary citizen from his own property or having his voice heard. And that is what FCC Chairman Bill Kennard is concerned about. FM broadcasters are consolidating, contributing to fewer contrasting opinions. The matter has become a Freedom of Speech issue.

## Pirate stations take matters into their own hands

During the past decade, hundreds of small unlicensed broadcasters went on the air anyway using low cost – often home brewed – FM broadcast stations. Some are built from kits that were made available by low power FM broadcast station sympathizers. The FCC has been very busy shutting them down.

The FCC has pulled the plugs on more than 400 pirate radio stations in the past two years alone. Aviation uses adjacent frequencies just above the FM broadcast band at 88-108 MHz and there have been a few cases where pirate FM broadcasts have interfered with air traffic control at nearby airports.

Most microbroadcasters (as they call them-

selves) have shut down voluntarily, but more than a hundred had to be taken off the air by court order. And some were shut down by having their stations raided and equipment confiscated. The government also has the power to impose huge fines and imprisonment of up to a year in extreme cases.

## Typical comments from the public

The FCC publishes all public comments to their proposed rulemaking at the Electronic Comment Filing System (ECFS) website located at <http://www.fcc.gov/efile/ecfs.html>. Here is a typical comment from those favoring establishing LPFM broadcasting:

"We now find ourselves in a time when allocations are auctioned off to the very wealthiest individuals who now own hundreds of licenses, and the interests and access of the people have dwindled to nothing. Along with this came an abandoning of responsibility to local communities. The interests of a few hundred individuals are now held as more important than the long acknowledged interests of hundreds of millions of American citizens."

Broadcasters, however, are firmly opposed. This comment is from the General Manager of Omaha's WOW-AM/FM:

"The FCC's recent NPRM concerning Low Power FM is an issue of grave concern. It threatens the health of the radio industry, and it falls short of what is needed to accomplish the Commission's LPFM objectives. How will removing interference protection and adding hundreds or perhaps thousands of radio stations to the FM band serve the public interest? Are Pirates trustworthy? It is not likely that scoundrels will want to become good citizens. They will more likely find ways to circumvent FCC regulations as they do now, figuring the Commission will be too busy administering LPFM and won't have time to investigate illegal pirate activities, and they are probably right."

One radio amateur (Mike Reynolds, WKIE, of Tulsa, OK) even proposed that the UHF and higher frequency ham bands be used for "...non-commercial, community-oriented radio broadcasting.... This solution would not require any new frequency allocations or frequency re-allocations and would not require any new FCC regulatory burdens.

"To make this solution work, the FCC would only do three things.

1. Allow amateur radio FCC call sign IDs on the hour rather than every ten minutes.
2. Allow amateur radio one way transmissions to include community news, views and analog music content in the current amateur radio allocations above 420 MHz; and
3. Allow one way transmission frequency coordination with generally accepted volunteer state amateur radio frequency coordinators."

## NAB gearing up to battle LPFM

The most talked about subject at the recent National Association of Broadcasters (NAB) convention in Las Vegas was not the coming implementation of digital TV or radio: It was the FCC's January proposal to open up the nation's low power FM airwaves to new alternative voices. They want no part of it.

NAB president, Eddie Fritts said FM broadcasters are "...very concerned that the FCC proposal may have the effect of legitimizing pirates." He also expressed concern that LPFM stations' signals would interfere with FM stations and that controversial groups (such as white-supremacists) might get low-power licenses.

Supporters say that opening up the airwaves to smaller stations will bring back the "...diversity of broadcasting voices" which has declined since the 1996 Telecommunications Act lifted restrictions on ownership of media outlets. Even though there are more FM stations in operation now, there are considerably fewer station owners.

Fritts is not buying that consolidation in the commercial radio industry has cut down on the number of differing opinions. "Let me debunk the myth of bigness is badness. We have been able to provide more diversity than ever before," he said.

What Fritts has not talked about, however, is the reality that the hundreds – or thousands – of new broadcast stations will siphon off their listening audience. That appears to be the unsaid principle objection ... especially if LPFM stations are permitted to accept advertising. Broadcasters depend on listener ratings as a basis for their advertising rates.

The public comment period expired on June 1st; the reply comments on July 1. The FCC is now in the process of evaluating the views and a Report and Order adopting, modifying or rejecting Low Power FM should come in about six months. We will keep you posted.



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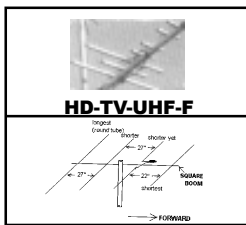
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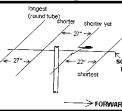
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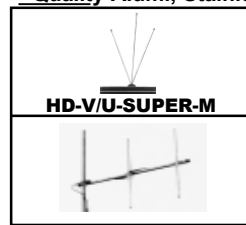
HD-SCANNER-WB-OMNI-F



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HD-SCANNER-WB-OMNI-F	25-1300 MHz	THE BEST! Top or Side Mount (Parts Incl'd) to Mast/Tower	F	Nom. 6.2 DB	67" 90"	7.5	1.9	N/A	12.5 LBS.
HD-TV-UHF-F	TV CHNL'S 14-69 FM-Stereo	ULTIMATE UHF TV Antenna (& Small!)	F	21 DB	30" 24"	3.5	0.5	N/A	6.5 LBS.
HD-FM-H4-F		ULTIMATE Long Range!	F	13 DB	85" 73"	8.5	1.3	N/A	13.5 LBS.
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<b>HAM-VHF YAGI (UHF HAM &amp; BUS. YAGIS ALSO AVAIL. ... SEE WEBSITE)</b>									
HD-146-V3-U	142-150 MHz	End, Mnt, 3 ele, Vert. using mast/tower as optimized reflector	PL-259	12 DB	36" 36"	3.5	0.4	600 W	6.5 LBS.
<b>HAM-WB-OMNI VERTICALS - SIDE ARM MOUNT WITH HARDWARE INCLUDED</b>									
HD-10M-WB-OMNI-U	26.9-30 MHz	Top or side mount 3.1 (HAM) DB: 10.6 ("CB LINGO") DB	PL-259	3.1 DB	72" 204"	5.5	1.6	1000 W	10.5 LBS.
HD-6M-WB-OMNI-U	50.0-54 MHz	Top or side mount	PL-259	3.1 DB	42" 108"	3.5	0.9	1000 W	8.5 LBS.
HD-146-WB-SUPER-O-U	140-150 MHz	{ THE SUPER OMNI'S! RADICAL Design! Uses "1/5 the (expensive) Tower Space!" }	PL-259	8 DB	71" 37"	4.5	0.7	600 W	7.5 LBS.
HD-440-WB-SUPER-O-N	420-450 MHz		N	8 DB	36" 12"	2.5	0.4	200 W	5.5 LBS.

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## Grass is Greener Dept.

Everyone wants something they don't have. WAMC Northeast Public Radio wants to expand its audience beyond the Albany, New York, area by expanding onto the Internet. While WAMC already has a website, it is planning a broader-based station that will broadcast only over the internet. *ThePublicRadioStation.com* will carry programming of national interest as well as English language news coverage from stations such as Radio Netherlands.

Rumor has it that National Public Radio is planning its own online network as well.

On the other hand, some listeners to public radio station WYSO in Yellow Springs, Ohio, feel the current trend toward national shows has gone too far. "A lot of us in Yellow Springs have felt a real void since they changed their local focus," says Gene Lohman, one of the organizers of an effort to establish a low-power alternative FM station.

The group will be looking to the National Federation of Community Broadcasters to help them through the process of acquiring an FCC license. The process is very expensive, since the minimum power required by the FCC is 100 watts, even though only 10 watts would do. If the FCC approves the low-power proposal currently under consideration, it would make it easier to find an available frequency and would be less expensive.

## Experimental Antenna Shows Promise

Scientists Maurice Hatley and Fathi Kabbary started with the premise that a magnetic field can be produced without a current flow in a wire. Using a reverse form of Maxwell's fourth equation, they produced an electromagnetic field using an RF-driven cylinder and capacitor plate in combination with critical phasing circuitry.

"If you can separately create the two fields and properly combine them, you don't have to have a piece of wire carrying a current," explains Ted Hart W5QJR, in an online article in *Antennex.com*. "Because of this, a fundamental feature of these antennas is that the physical size of the structure is small and also independent of the radiated wavelength, a truly remarkable concept in relation to present day antenna theory and design techniques."

The design, known as the Crossed-Field Antenna (CFA), has been patented and Kabbary has built two successful configurations. Four CFA antennas are reportedly operating in Egypt, Kabbary's native country.

The CFA's advantages are its very small size (around a *one-fiftieth* wavelength!), high efficiency (6 dB gain relative to a conventional 1/4 wavelength vertical), little induction field (allowing closer spacing of adjacent antennas), and broad bandwidth.

The longwave license for the Isle of Man,

mentioned this month in Glenn Hauser's column, was apparently awarded on condition that a CFA will be used, as a "superior technical solution to the environmentally sensitive issue of the transmitting aerial required for broadcasting on long wave."

## NZ Natives Own the Spectrum

When New Zealand was founded, the Treaty of Waitangi promised to protect all things valuable to its indigenous people, the Maori. But whether, and how, this treaty translates into the 20th century and beyond is the job of the Waitangi Tribunal.

Recently the government wanted to auction a 20-year license to manage the radio spectrum in the 20 GHz range, but the decision to sell was blocked by the Maori, who claimed ownership of the spectrum. The tribunal apparently agreed, and argued a generous portion of the net proceeds from the sale should be devoted to preserving the Maori language and culture.

The executive director of the Telecommunications Users Association of New Zealand said he thought the Tribunal was supposed to settle Maori claims once and for all, not drag the uncertainties into the future.

Hm-m-m, could native Americans in the U.S. claim the right to auction off radio spectrum within their reservations? Or, hey—here's a novel thought: What about a lottery?!

## No One's Listening

"There's no government facility listening," said former US radioman Ed Brady. And after July 12, neither is there anybody privately listening for Morse code distress calls. KFS, KPH, WCC and WNU were the last commercial radiotelegraph operations in North America.

A final ceremonial message was tapped out to Washington from the World War II-era Liberty ship *Jeremiah O'Brien*, docked in San Francisco harbor. (Globe Wireless forwarded it to the White House by email.)



(See [www.grove-ent.com/hmpgmt.html](http://www.grove-ent.com/hmpgmt.html) for more events and club info)

### Sept 3-5: Bridgeport, WV

National Radio Club convention at the Holiday Inn (304-842-5411). Convention registration \$35 to host William Swiger, One Casey Lane, Bridgeport, WV 26330, 304-842-4635.

### Sept 4-5: Shelby, NC

Shelby ARC's 43rd annual hamfest at the Cleveland County Fairgrounds, US 74 Business and NC180; Gates open 6a.m., buildings 8a.m., admission \$6. Forums, VE exams (no preregistration), huge flea market. For hamfest info call 704-480-6928 or visit [www.shelby.net/n4fan](http://www.shelby.net/n4fan)

### Sept 11: Ballston Spa, NY

Saratoga Co RACES 14th annual hamfest, Saratoga County Fairgrounds, 7a.m.-3p.m., talk-in 146.40/147.00 and 147.84/147.24. Admission \$5 (incl tailgate spot). VEC exams, fox hunt, computer vendors, prizes. For info, call Darlene Lake N2XQG 518-587-2385, [lake@capital.net](mailto:lake@capital.net).

### Sept 18-19: Virginia Beach, VA

The VA state convention hamfest at the Virginia Beach Pavilion, talk-in 146.970; admission \$6. Forums, banquet, VE exams (contact Ed Brummer 757-898-8031). For info, [hamfest@axis.net](mailto:hamfest@axis.net) or [www.vahamfest.com](http://www.vahamfest.com)

### Sept 19: Newtown, CT

Western CT Hamfest sponsored by Candlewood ARA, at Edmond Town Hall (Exit 10 off I-84, south on Rt 6), talk-in 146.67. 9a.m.-2p.m.; admission \$4. Contact CARA, 203-857-7050 or visit [www.danbury.lib.ct.us/org/cara/](http://www.danbury.lib.ct.us/org/cara/)

### Sept 19: Trenton, NJ

Delaware Valley RA FallFest '99 at the Tall Cedars of Lebanon picnic grove, Sawmill Rd; 8a.m., \$6 admission, nonham spouses and children free. Talk-in 146.67 (-) Info call 609-882-2240 or [www.slac.com/w2zq](http://www.slac.com/w2zq)

### Sept 24-26: Oakville, Ontario

Ontario DX Assoc. Radio Fest 99 celebrates the 25th anniversary of ODXA at the Ramada Inn (Queen Eliz Way & Trafalgar Rd: 800-357-0880). "Celebrating 25 Years of Radio Fun." Fri-Wine & Cheese reception, Sat-seminars and speakers, Sat evening-banquet, Sun-possible radio tour. [odxa@compuserve.com](mailto:odxa@compuserve.com) or [www.durhamradio.com/odxa/](http://www.durhamradio.com/odxa/)

### Club News:

New websites - AMANDX (Assoc of Manitoba DXers) <http://www.angelfire.com/mb/amandx/index.html>; Signal Surfer DX Club <http://www.futurenet.bc.ca/~djab/>

Disbanded - Southern Wisconsin SW Listeners Net, and Radio Monitors Newsletter of Maryland (RMNM)

"Morse code has finally met its match," admitted Tim Gorman, operations director for Globe Wireless. The four stations continue to beam shipping information, news and weather to ships at sea as part of the larger Globe Wireless network using satellites and short-wave radio.

The New Zealand navy sent its last Morse code message only a day or two prior to Globe's final transmissions. Monitoring for Morse distress calls ceased to be an international requirement February 1st.

## Ship-to-Phone

Harris Corp. has won a contract from MariTEL to help establish a wireless marine communications network called MariNET. Currently, most areas only can only accommodate one phone call at a time from a marine radio, and boaters must place their calls manually. MariNET will be a system of 300 towers on shore with at least nine channels to make it easier for boaters to place phone calls, check e-mails and send faxes from a range of up to 100 miles from shore.

## New Trunked Systems

Philadelphia's city council has approved a \$50 million digital 800 MHz system to be built by Motorola over a period of three years. Philadelphia's legal department reportedly concluded that there is "no general right of the news media or others to monitor police and fire radio communications."

In one of the most even-handed reports of the digital trunking issue this editor has ever read, reporter Gwen Shaffer of the *Philadelphia City Paper* writes, "One thing remains certain, however – once the digital system is in place, the media will be at the mercy of city officials."

Five suburbs west of Detroit – Westland, Wayne, Garden City, Inkster and Dearborn Heights – are forming a consortium to share an emergency dispatch system for police, fire, and medical emergency crews. The 800 MHz system is being developed by Motorola and should be testing this fall.

Riverside County in Southern California voted to stick with their Ericsson system and invest in an upgrade that will improve the dead spots especially in the hilly area in the southwest. "When a deputy pushes the button, the mike needs to work," said Sheriff Larry Smith.

The upgrade (which includes the option to move to digital transmission when it becomes cost effective) was chosen over reopening bids to allow Motorola to bid, or moving to cellular (even spottier coverage) or satellite communications (too expensive per minute).

## Trunking Goes Underground

The above mentioned *Philadelphia City*

*Paper* article admits, "a whole other city lurks beneath Philly streets, in subway tubes and pedestrian tunnels," and radio coverage here is a problem for the future.

San Francisco is addressing this underground communications problem in its San Francisco Bay Area Rapid Transit District (BART) airport extension project. The Andrew Corporation has been awarded a contract to build an underground trunked radio system for emergency and train control communications. The new system will use Andrew's tuned Radiax® radiating cable with a fiberoptic interface with the above-ground trunked system. Andrew is also installing the same system in existing BART tunnels.

## Bugged by the Feds

Reputed mobster Vincent "Gigi Portalla" Marino has charged the government with implanting a computer chip in his butt to keep tabs on him. As reported in the *Boston Herald*, Marino's lawyer Robert Sheketoff said, "When he was arrested by the DEA at Logan Airport, he was told they wanted him to sign a form authorizing the removal of the device they had implanted in him several weeks earlier when he had been operated on for a gunshot wound."

A DEA agent admitted making the statement, but said it was a joke. The judge ruled that there was no such device implanted. Marino's lawyer commented, "The bottom line is if the government did this I'd be surprised if they admitted it."

## CQ Editor Dead at 61

Alan M. Dorhoffer, K2EEK, and editor of *CQ* magazine, died July 19 from complications of cancer surgery. He was 61. Dorhoffer, who'd served as editor of *CQ* for nearly a quarter-century, had spent his entire professional life at the magazine. He started as an assistant editor in 1964 and became the magazine's tenth editor in 1976. He'd been a co-owner of the amateur radio magazine since 1979.

"Communications" is composed of news clippings submitted by our readers and compiled by Rachel Baughn, editor. This month's contributors are: Anonymous, Riverside, CA; Anonymous, Manchester, NH; Anonymous, Albany, NY; Axel Camp via fax; John Catalano, via email; Roger Cravens, via email; Ken Hydeman, Xenia, OH; Kevin Klein, Neenah, WI; Bob Leef, RCMA; Tom Madden, Lake Geneva, WI; Larry Magne, via email; Haskell Moore, via email; Jeff Multer, Fort Mill, SC; David Parsons, Tucson, AZ; Ira Paul, Royal Oak, MI; Doug Robertson, Oxnard, CA; Brian Rogers, Melvindale, MI; Tim Roske, Albany, NY; Ed Schwartz via email; Richard Sklar, Seattle, WA; Donald Strumpf, Bryn Mawr, PA; Larry Van Horn, Brasstown, NC; Greg Wodyski, via email

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# ***DXing Latin America.***

## ***BY AIR***

*The runway in Merida, Venezuela, runs right through the middle of town.*

**By Don Moore**

**L**ooking for something different to DX? A way of adding some new entries to the logbook? But something that doesn't require trekking to a remote cabin and stringing a mile of wire through bear-infested woods? Utility DXers in North America need look no further, as one of the world's biggest concentrations of aeronautical stations still on shortwave is right at our doorstep, in Latin America.

### **A Little History**

Latin American commercial air service began in 1919 with a very short-lived airline in French Guiana. Next up was CCNA, which began mail and passenger service in Colombia in early 1920. By the end of the year, they had lost three of their four planes and two of three pilots and called it quits.

Latin America's oldest surviving airline is Colombia's Avianca. Founded as SCADTA in September, 1921 SCADTA began with flights between Barranquilla on the coast and Giradot in the highlands near Bogotá using several Junkers F-13 floatplanes. Passages were \$200 to Giradot but only \$150 to Barranquilla. Why the difference? The airline had to compete with riverboats for business and the boats were much faster going downstream. Every bit of business was important, too. The F-13 only carried three passengers and 40 kilograms of freight, including luggage and mail. Passengers who weighed over 65 kilograms were charged extra.

The big name in early Latin American air travel was TACA, Transportes Aereos Centro Americanas. This company was founded as a local airline in Tegucigalpa, Honduras, in the early 1930s by

New Zealander Lowell Yerex and some local investors. Not that it was easy. For example, in 1932 the Honduran government pressed TACA into service to drop propaganda leaflets to guerrillas in the mountains. But TACA persevered and quickly expanded to the rest of Central America and then into South America, serving 235 points in 16 countries by 1937. Overhead was kept down through improved communications via an extensive radio network, something other airlines were slow to establish.

In the early days of air travel, carrying air freight was a bigger business than carrying passengers. Latin America lacked the extensive network of railroads and navigable rivers found in the USA and Europe, so freight is where TACA made its real money. Between 1937-1941, TACA carried more freight than any other airline in the world – including more than all US-based airlines combined.

But after 1941, governments in South America inexplicably began taking away TACA's landing rights. Reportedly, the cause was newcomer Pan-American which pulled political strings to get the US government to pressure its South American counterparts to dump TACA. Pan-American did pick up most of the business that TACA lost. The small Central American countries that TACA represented simply didn't have the political might. The lost business drove TACA into a financial tailspin and it was eventually downsized to the small El Salvador-based airline that it is today, a fraction of what it once was and might have become.

### **Good Pilots Only Please!**

As the early Spanish colonizers preferred the cooler highlands, most of Latin America's important cities were built in rugged, mountainous terrain. In the early days of air travel, the small planes only needed small runways, which were easy to find space for.

However, as larger planes needed longer runways, there was often barely room to squeeze them in. In some places today, pilots need to make sharp turns to avoid nearby mountains. In others, they must descend or ascend very rapidly because the mountains simply don't make room for a more gradual change in altitude. Moreover, the thin air means less air resistance, making it more difficult to slow the plane down. (Thin air is a help at takeoff, however.) For these reasons, only the very best pilots are permitted to land larger planes at more difficult runways.

Lowland jungle airports are not always better. They often lack modern direction-finding gear and can be difficult to find from the air in the featureless green carpet below. Whether in the jungle or the mountains, a heavy fog at the wrong time can make the difference between a good pilot and a dead pilot.

In Merida, Venezuela, the inhabitants boast that it's no trouble getting downtown from their airport because the airport is downtown. Indeed, the main terminal is only twenty blocks from the main plaza—and the north end of the runway only ten blocks away! The runway is on a narrow strip of land wedged between the city's two main north-south avenues with a huge mound of dirt at the downtown end, just in case.

In Tegucigalpa, Honduras, a highway bridge runs below the flight path a few yards from the end of the runway. Some years ago a pilot came in just a tad too low and clipped the top off of a minibus, killing all inside. Today, traffic is stopped at each end of that bridge whenever a plane is landing.

The airport in La Paz, Bolivia, is named El Alto (The High One) for good reason—it's the highest commercial airport in the world. There was no room for a long airstrip in the canyon where the city is, so it was built on the plateau above at 13,354 feet altitude. At that altitude it takes a *lot* longer to slow down a big plane!

Some of the smallest airports are found at remote locations that commercial airlines don't serve. In a few countries, the national Air Force fills in. For example, Ecuador's TAME and Colombia's SATENA are airlines run by those nation's Air Forces to serve remote towns not on the flight grid of private companies.

## Not Always First Class

The pilots may need to be pros, but some Latin American airlines are, well, less than the best. Gringos in Central America used to joke that now-defunct Honduran airline SAHSA's initials stood for "Stay At Home, Stay Alive." Some call TACA "Take A



**TAME flight on the runway in Quito, Ecuador. As TAME is owned and operated by the Ecuadorian Air Force, its pilots are military officers.**

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Chance Airlines.” And Spanish speakers may refer to AeroPeru as AeroPeor (peor = worse). While tales of live animals in carry-on luggage are exaggerated, after a flight from Cuenca to Quito, Ecuador, thirteen years ago, the author did see several fellow passengers pick up cardboard boxes of live chickens from the checked luggage!

Until a few years ago, Bolivia’s LAB airline had a rather unusual open-seating policy. Tickets for domestic flights were non-dated and passengers showed up whatever day they wanted. When departure time came, the terminal doors were opened and everyone took off running across the tarmac to the plane. Those who didn’t get seats had to get off and await the next flight. (In 1985, the author proudly beat several hundred others to be first in the door for a Boeing 727 flight from Cochabamba to La Paz.)

In fairness, these examples are the worst extremes. At the other end, some Latin American airlines such as Brazil’s VARIG, Lan Chile, and Ecuador’s SAETA are said to far exceed most US based airlines in quality of service. Of course, the free alcoholic beverages available on flights by many of Latin America’s airlines doesn’t hurt.

## International Air Traffic

Shortwave broadcast DXers joke of how spouses and friends think rare DX catches sound like static. Utility DXers, on the other hand, really do listen to static! Not intentionally, of course, but utility transmissions are not constant like broadcast stations. You have to “park” on a frequency and wait for something interesting to pop



*The terminal building at Mariscal Sucre Airport in Quito, Ecuador. Passengers walk across the open tarmac to the runway.*

up. If you have several receivers, set them to different frequencies.

Some shortwave receivers have scanning capabilities to monitor several frequencies at once. However, scanning doesn’t work as well on shortwave as it does on VHF/UHF. For example, if you have to set a high squelch level to prevent the receiver from stopping on noise, you will miss the weaker (and better) catches. Regardless of how you listen, keep a tape recorder running to help out with missed IDs.

The place to start logging Latin America by air is on the MWARA (Major World Air

Route Areas) frequencies. Under the MWARA system, the world has been divided into a number of regions, each of which uses common frequencies for communications involving long-distance international air flights. There are two groups of frequencies used for South America, two for the Caribbean, and two more for flights across the South Atlantic between South America and Africa. (See Table C, p. 13)

Most communications on Latin American MWARA frequencies are between airports and aircraft in flight. The aircraft will identify by carrier and flight number, e.g., Lan Chile 378 or United 857. An exchange of traffic will

start out as one party (either airport or aircraft) calls the other. For example, “La Paz, La Paz, Varig 328,” if the Varig flight is calling La Paz. The called party then answers with its own ID. Communications can go back and forth for several minutes, although there may be some long pauses. Both sides usually identify themselves several times, including when the exchange is terminated.

To the benefit of gringo DXers, many of the flights crossing Latin America belong to US or European airlines. Thus, most of the traffic on Latin American MWARA frequencies is in English. However, Span-

**TABLE A: SELECTED INTERNATIONAL AIR FREQUENCIES**

5529	Iberia Airlines LDOC, Dominican Republic
5535	American Airlines LDOC, Peru
6649	Caribbean and Central America
8855	Northern and Eastern South America, Caribbean
8918	Caribbean and Central America
8939	Varig Airlines LDOC (Brazil)
10024	Western South America

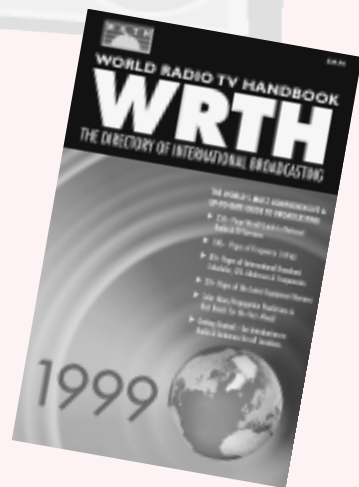


*SERVIVENSA airliner on the tarmac at Maiquetia Airport in Caracas, Venezuela.*

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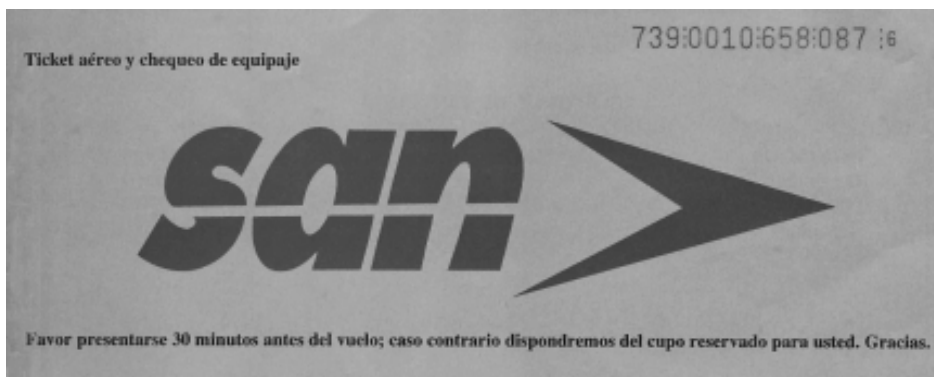
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ish is often used if that is the native language of both the airport and air carrier (or Portuguese in the case of Brazilians). As identifiers are usually repeated several times, with a little listening it should still be possible to understand the name of the airport and air carrier even on Spanish transmissions. With a little knowledge of Spanish numbers, the flight number can be picked out as well.

Certainly the best Latin American frequency to monitor is 8855 kHz, the primary frequency for eastern South America from Venezuela to Argentina. In North America, traffic can be heard here for most of the day and night. One of the more interesting times to monitor 8855 is in the wee hours of the morning (0400 UTC and after) as planes on long-haul flights between North America and the southern countries of South America make their way across the Amazon jungle. Along the way, the aircraft check in to air traffic control centers in Manaus and Porto Velho, (Brazil), Leticia (Colombia), and La Paz (Bolivia), among others.

Another good frequency to monitor, especially around 2200-0200 and 1000-1400 UTC, is 10024 for western South America. Lima, Peru, is the most frequent airport heard here. Other common ones are La Paz, Guayaquil (Ecuador), and Santiago (Chile). For a really good catch, spend a little time on 10024 and you should log Pascua, known as Easter Island to English speakers!

LDOC frequencies, or frequencies for communications between aircraft and their company's main offices, are another source of international aero DX. Brazilian airliner Varig's frequencies of 8949 and (especially) 8939 are some of the most active during North American evenings, although all traffic is in Portuguese. Peru's Faucett airline and its planes can often be heard on 8188 in the mornings (but be careful, as the frequency is used by yacht traffic as well).

## Domestic Air Traffic

The next step in DXing Latin America by air is to go after domestic airports and flights. In some countries, shortwave is still used for communications between smaller regional airports and for domestic flights. Logging these takes a bit of work, however. First, communications are always in Spanish (or Portuguese). Secondly, most domestic air traffic is on lower frequencies which do not propagate far during the day.

However, because there are few night flights and most smaller airports close at night, the frequencies are not in use when distant DXers can hear them. Go after these guys in the mid-winter months, when longer nights in North America create favorable reception windows around your local dawn and dusk. Eastern DXers will have a better chance in the their late afternoons, while West Coasters will do better in the morning.

Start out by parking on 8896.5 kHz. This frequency is used to exchange flight information between airports in northern Peru. While often 8896.5 is buzzing with nonstop traffic, sometimes it will be totally dead. So, if you don't hear anything, keep trying.

The next most active frequency is 5562, used by several airports in Cuba. Again, early morning and later afternoon are the best times, although some traffic can be heard throughout the evening on this one.

Colombian airports can be heard on several frequencies, with 6532 kHz being the best. Airports in northern Colombia are audible in winters from 1130 UTC until after sunrise and again from about 2100 to 2330 UTC. (This frequency is also used for flights across the central Pacific, so you will hear a lot of English, too.) In the mornings around 1200, check 5556 kHz for southern Colombia and 5508 for central Colombia.

Stations on these domestic frequencies ID similarly to those on international ones. For example, on 8896.5 you may hear "Tarapoto, Tarapoto, Iquitos" as Iquitos calls Tarapoto. The name of the called station is customarily given twice followed by that of the caller. Tarapoto will then reply with "Iquitos, Tarapoto," saying each name once. This system actually makes it easier to pick out IDs for aero stations than for Latin American broadcasters, because the ID is distinctly stated by itself and not in the midst of some long-winded DJ chatter.

On the other hand, domestic air stations rarely ID after the initial contact, making it important to hear the exchange from the

**TABLE B: SELECTED DOMESTIC LATIN AMERICAN AERONAUTICAL FREQUENCIES**

1685	Colombia: "MER" - airport beacon with Morse code IDs
5508	Central Colombia: Manizales, Quibdo, Rio Negro (Medellín), Monteria
5530	Guatemala: Flores, Aurora (Guatemala City), Huehuetenango, Quetzaltenango, Coban, Quiche, Puerto Barrios, Coatepeque, San José, various Aviateca flights. Also Cancún, Mexico.
5556	Southern & Central Colombia: Armenia, Buenaventura, Cali, Florencia, Ibagué, Ipiales, Pasto, Pereira, Popayán, Puerto Asis, Quibdo
5595.5	Southern Perú: Arequipa, Lima, Cuzco
5562	Cuba: Boyeros (Havana), Santiago, Cayo Largo, Camaguey, Varadero
5601	Ezeiza VOLMET (Argentine Aeronautical Weather)
5719.8	Ecuador: Quito, Guayaquil, Cuenca
6532	Northern Colombia: Barranquilla, Corozal (Sincelejo), Monteria, Turbo, Valledupar. San Andrés and Providencia islands.
6617	Northern Perú: Lima, Chiclayo
8896.5	Northern Perú: Cajamarca, Chachapoyas, Chiclayo, Chimbote, Huanuco, Iquitos, Juanjui, Lima, Moyobamba, Piura, Pucallpa, Rioja, Talara, Tarapoto, Tingo Maria, Trujillo, Tumbes, Yurimaguas
8903	Peruvian Air Force (tactical calls with Gromo and Tornado being the most active)
8957	Bolivian traffic heard here, but no positive identifications.
9180	Southern Perú: Andahuaylas, Arequipa, Ayacucho, Cuzco, Ica, Juliaca, Lima, Pisco

**TABLE C: MAJOR WORLD AIR ROUTE AREA (MWARA) CONTROL STATION FREQUENCIES (FROM PLANE TALK, FEB 99 MT)**

**CAR-A & B** (Caribbean Area A & B)

Barranquilla, Boyeros, Caracas, Cayenne, Curacao, Georgetown, Guatemala City, Havana, Kingston, Maiquetia, Merida, New York, Panama, Paramaribo, Piarco, San Andrés Island, Santiago De Cuba, San José, Santo Domingo, Tegucigalpa (Toncontin Int'l)

2887, 3455, 5550, 5520, 6577, 6586, 8846, 8918, 8846, 11330, 11396, 13297, 17907.

**SAM-C** (South America Central Area)

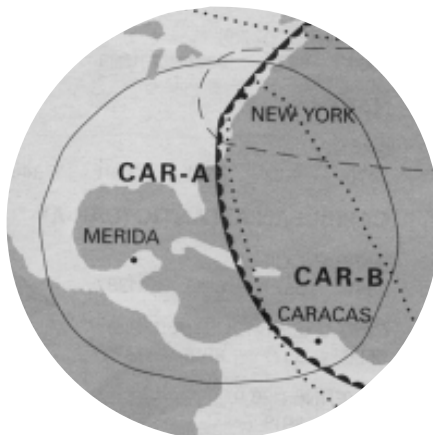
Belem, Bogotá, Brasilia, Iquitos, Leticia, Manaus, Maiquetia, Porto Velho, Rio de Janeiro:

3479, 5526, 8855, 10096, 13297, 17907

**SAM-NE** (South America North Eastern Area)

Belem, Cayenne, Georgetown, Maiquetia, Paramaribo, Piarco, Recife:

3479, 5526, 8855, 10096, 13297, 17907



**SAM-NW** (South America North Western Area)

Barranquilla, Bogotá, Caracas (Maiquetia), Lima, Quito:

2944, 4669, 6549, 10024, 11360, 17907

**SAM-SE** (South America South Eastern Area)

Asunción, Belem, Brasilia, Buenos Aires, Campo Grande, Curitiba, La Paz, Montevideo, Lima, Porto Alegre, Porto Velho, Recife, Resistencia, Salvador (Dois De Julho), Santa Cruz:

3479, 5526, 8855, 10096, 13297, 17907

**SAM-SW** (South America South Western Area)

Antofagasta, Asunción, Bariloche, Buenos Aires (Ezeiza), Comodoro Rivadavia, Cordoba, Easter Island (Pascua), La Paz, Lima, Mendoza, Puerto Montt, Punta Arenas, Resistencia, Salta, Santa Cruz (El-Trompillo), Santiago, Talara, Ushuaia:

2944, 4669, 6549, 10024, 11360, 17907



very beginning. Parking on these frequencies and waiting is the only way to ID stations. It helps to have a good book or the current *Monitoring Times* at hand!

## Tools of the Trade

The frequencies in Tables A and B are enough to get started with. However, it's impossible to seriously DX shortwave aeronautical frequencies without a copy of Bob Evans' excellent book *The Worldwide Aeronautical Communications Frequency Directory*. This lists many more Latin American MWARA, LDOC, and domestic aero frequencies and the airports that use them than those found here. It also has a very good list of airlines.

For QSL hounds, addresses of Latin American airport radio stations and airlines are hard to come by. In most cases, however, simply addressing reports to "La Radio Estacion del Aeropuerto" at the particular airport, city, and country will probably do the job, especially for stations in

smaller cities. Although the author has received a few great QSLs from Latin American airports, the percentage that reply has been very low. But, that's part of the challenge.



Travel books are another source of information, especially ones oriented towards more adventurous travelers such as the *South American Handbook* series or those from Lonely Planet Publications. These books don't list frequencies, but they do tell which remote towns have airports and give the names of small local airlines. This information is so local and specialized, that not only isn't it in Bob Evans' book, but it can't be found in the many resources available to travel agents. Some have maps showing local flight routes. Check your local library or amazon.com for these books.

So, what's left? Only to take off for the radio monitoring skies. Receiver on? Check. Antenna connected? Check. Tape recorder on? Check. Headphones plugged in? Check. *Monitoring Times* open? Check. Cleared for departure to Latin America, by air.

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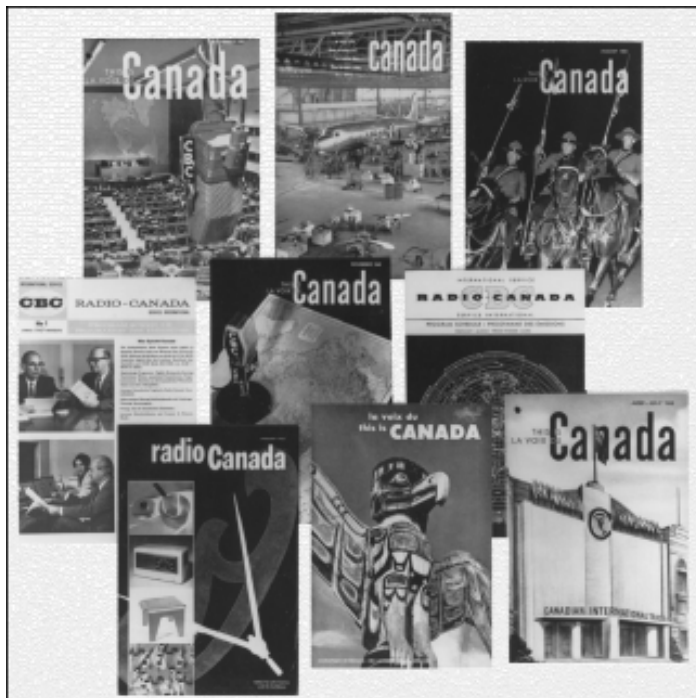


# RADIO CANADA INTERNATIONAL



## Canada's never-say-die international radio voice

By Ian McFarland



*BACKGROUND: For the first three decades or so of its existence Radio Canada International was known to its listeners around the world as the International Service of the Canadian Broadcasting Corp., or CBC IS for short. The CBC is Canada's publicly owned broadcasting system, patterned after the BBC in Britain. Back in 1950 the CBC IS was broadcasting to the world in sixteen languages with daily broadcasts to Europe, the Caribbean, Latin America and the South Pacific.*

*As we approach the start of a new century the RCI broadcast language lineup numbers only seven: English and French – Canada's two official languages – along with Spanish, Arabic, Russian, Ukrainian & Mandarin Chinese. Daily broadcasts via shortwave are currently beamed to Europe, Africa, the Middle East, the Caribbean, Mexico, Latin America and Asia. Europe is also covered on an almost round the clock basis via the "Hot Bird" satellite, in addition to worldwide coverage via Real Audio on the Internet at <http://www.rcinet.ca>*

*One would have to go back just over two decades to discover the beginnings of what seem to be RCI's almost constant budget problems and the slow erosion of what listeners have been hearing on the air via shortwave and other means.*

*In 1978 RCI was hit with a budget cut of some 22 percent, which reduced the number of languages RCI was broadcasting in from sixteen to a dozen. Since that time, life for Canada's international radio voice has been a series of budget and staff cuts, and numerous threats of closure for the service with accompanying pleas to listeners to write to the Canadian government to help keep RCI on the air.*

*After the first few times it becomes more and more embarrassing to make on-air pleas for letters of support from listeners. For RCI's staff and management it became increasingly difficult to make any long range plans without wondering if they would ever come to pass. After three attempts to shut RCI down over the past seven years, mercifully, RCI's budget appears to have stabilized after those tumultuous years of uncertainty.*

**S**ince Radio Canada International went on the air with its inaugural broadcast on February 25, 1945, as the International Service of the Canadian Broadcasting Corporation (CBC IS) there have been a number of attempts to shut it down. In between the attempts at closure have been numerous budget cuts, many of which came as a result of budget cuts within RCI's parent organization the CBC, which funded RCI.

### RCI? What's that?

One factor that hasn't done much to improve RCI's survival ability was the fact that over the years comparatively few Canadians, including those in government, have been aware of RCI's existence or were aware of RCI's excellent reputation around the globe for its popular programming and the relatively informal, laid-back sound of what was heard on the air. Even within the CBC there was a relatively low level of awareness of RCI.

The most serious of RCI's near death experiences came early in 1991 as a direct result of a 140 million dollar cut to the budget of the CBC. The federal government was slashing budgets wherever it could in a furious attempt to reduce a national deficit which had

grown to unmanageable proportions, and since the CBC was partly funded by the federal government it had to shoulder its share of the deficit cutting burden along with various government ministries.

RCI staff could be forgiven for thinking that the service was shouldering an unfair share of the CBC's budget cut burden. Under those circumstances, said the CBC, they could no longer manage to fund RCI to the tune of some 22 million dollars annually. If the government wanted to keep RCI on the air, the CBC said, it would have to find an alternate source of funding.

Since the budget of pretty well every government ministry and department was being slashed, alternate sources of funding for RCI didn't readily leap to anyone's mind. It was then announced that RCI would be shut down, and the situation looked decidedly grim for RCI's beleaguered staff and management.

### The best deal around

It wasn't as if Canada, as a nation, wasn't getting enough bang for the buck from RCI's budget. The per capita cost for RCI before the massive cuts in 1991 was a mere seventy five cents. The cost of a cup of coffee. It's difficult to imagine any other agency or organization in

the country creating as much international goodwill for such a modest outlay.

Luckily, RCI had two staunch supporters in the federal cabinet: the Minister for Foreign Affairs, Lloyd Axworthy, and the Heritage Minister, Sheila Copps, who also happened to be the Deputy Prime Minister. They felt strongly that shutting RCI down would be a very misguided move for only a short term gain. Once again, as they had done in the past, RCI listeners worldwide rose to the occasion with thousands of letters of support. In addition to that support there was enthusiastic backing from the Canadian public such as had never before been seen, as well as unprecedented support from the Canadian media.

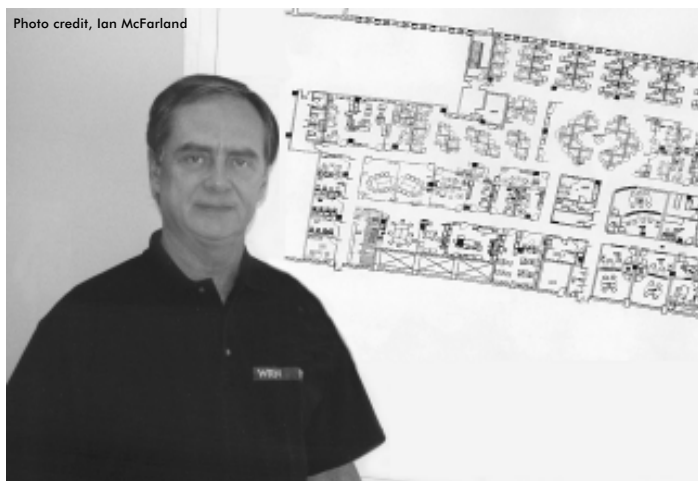
The federal government finally announced that funding for one year would be found to allow RCI to stay on the air. The CBC was told that it would still have to supply part of the budget for RCI, albeit a smaller proportion than before, and the government would supply the rest.

RCI had survived yet again, but only just. The effects were devastating. The budget was cut in half, as was the staff, and seven language services disappeared virtually overnight. With this unsubtle blow of the budget cutter's axe, all of the popular feature programs in the English service, which listeners had enjoyed for many years, ceased to exist. The English and French core services suddenly became little more than a relay service for selected programs from the respective domestic networks of the CBC. This domestic radio network programming also served to fill the airtime vacated by the seven language services that were shut down.

The size of RCI's worldwide listening audience plummeted. One can only hazard a guess as to just how many listeners RCI lost due to all of these program cuts and just how many it will be possible to regain in the long run. It would be more than two years before RCI once again had a mailbag program in its English service lineup.

## More cuts on the way

After that devastating experience on March 22, 1991 – a day remembered as Black Friday for many RCI staff, including this writer – most thought that things would remain stable for a couple of years at least.



*Following a dismal decade for RCI, Executive Director, Bob O'Reilly, predicts a brighter future at the turn of the century, with new transmitters being installed at Sackville and new offices under construction in Montreal. Pictured is an artists concept of the new annex.*

That was not to be. In the spring of 1993 RCI was hit by another lightning bolt – a further budget cut of one million dollars. Until this unforeseen blow, RCI had been working on plans for a round the clock news service in English and French. This latest budget cut effectively canceled those plans.

Unbelievably, that million dollar cut was followed several months later by yet another decision to close RCI down. Of that threatened closure, current RCI Executive Director Bob O'Reilly says, "While it had a devastating effect on staff morale it also spurred them on, as a family, to say that they weren't going to let this closure actually come about. It gave staff a new camaraderie and sense of purpose." O'Reilly has been RCI's Executive Director only since mid-1997, when a new management team took over.

Fortunately, RCI survived that threat, and the defiant stance of the staff served RCI well when, incredibly for almost a week in December of 1996, RCI was again under threat of closure. For RCI the decade of the nineties was turning into a seemingly endless nightmare and the decade was barely half over. On this occasion the service was rescued by the federal government thanks to the support of two key members of the federal cabinet, along with some high level civil servants. They agreed to keep RCI going for a year, allowing time to explore the possibilities for permanent funding.

A reassuring indication that RCI may be around for many more years is the fact that the service has been included as one of the keystones of the federal government's Canadian International Information Strategy, or CIIS, an initiative of the Ministry of Foreign Affairs. With this very much in his mind one of the first tasks for RCI's new Executive Director was the development of a five year strategic plan which was submitted to the CIIS for consideration. Additional funding for new language services could be one result of this submission, says O'Reilly.

## Reassuring messages from government

As the 1996-97 fiscal year was drawing to a close, explains Bob O'Reilly, "The CBC was into the seventh year of serious budget cuts, and RCI's budget was a mess."

Part of it came from the CBC's budget, along with money from several government ministries and the Department of National Defence. At this point the CBC, with its own budget in tatters, told the government once again that it simply could no longer manage to fund their portion of the RCI budget. To the rescue once again came the Minister of Foreign Affairs, Lloyd Axworthy, and the Heritage Minister, Sheila Copps. They agreed to fund RCI from their own budgets for one year while they sought out a permanent source of funding.

The following year it was announced that RCI would be funded by the federal government, on a permanent basis. Since the RCI budget would no longer be coming from any individual ministry, but rather from general government operating funds, it would be less vulnerable than in the past to future budget cuts. There would be an assured budget of 15 million dollars per year through the current 1999-2000 fiscal year.

While RCI's funding now comes completely from government, as does the funding for most international broadcasters, it is no government mouthpiece. From the very start back in 1945, Canada's international radio voice has always enjoyed complete editorial independence, as has its parent organization the CBC. The relationship with government has always been at arm's length. There is consultation on matters of language and target area priorities, but that's where the government's influence ends.



## New money for technical updates

One very solid indicator that RCI does indeed have a much rosier future than it has had in years is the fact that in addition to assured funding RCI was also given a total of 15 million dollars in so-called "capital money." This is to be paid over three years and will finance such things as new transmitters and updating studios to full digital operation.

Due to the uncertainty of recent years, little had been done to update RCI's existing equipment. As Bob O'Reilly explained in an interview, "We made arguments to the government that we needed to renew our transmitters to ensure that we could continue to broadcast. We needed the latest technology so that when we go into digital broadcasting we could broaden the range of programming available to us, since digital technology is a lot more robust than analog technology is." As O'Reilly also points out, the people handing out this money know full well that the equipment it will be buying is good for 20 years or more.

The 15 million in capital money is making it possible to replace the aging transmitters at RCI's Sackville, New Brunswick, transmitter plant. The new units will be the latest in analog equipment, but quickly convertible to digital when an international standard is agreed upon. The first two of the new units are now being installed. The old transmitters won't be scrapped, but left in place for possible use as relay transmitters on which time can be purchased by other broadcasters.

## Are we waiting for any more shoes to drop?

While the past few years have been something of a living nightmare for everyone at RCI, things now definitely seem to be looking up. Explained O'Reilly, "In the first year of the current three-year period of stable funding at RCI, we concentrated on settling things down after so many years of budget cuts and threats of closure. Staff had to be assured that they no longer had to keep looking over their shoulder, wondering when the next crisis would appear, and could safely concentrate on programming."

RCI was also reorganized to put it on a structural basis which showed that first and foremost, RCI was a programming outfit. For many years, says O'Reilly, "RCI was an engineering outfit. Engineering dominated the budgets and personnel. Things had to change so that everything was a function of supporting the programming output." Having achieved that aim in 1998, this year RCI has been able to concentrate on programming.

One key aspect of the new emphasis on programming was the establishment, for the first time ever at RCI, of a Marketing and Research Dept. In an effort to get direct feedback from listeners as to what they like and don't like about RCI programs, the department has run focus groups in South America, Ukraine and China, with more to come in the future. The feedback is then passed on to the program producers.

## The slow trip back to how things were

In terms of original programming, over the past couple of years RCI has slowly been trying to work its way back to some semblance of what it was when disaster struck in the spring of 1991. Last fiscal

year RCI-produced programming was increased by some fifteen percent, including two new live morning shows in English and French beamed to Europe. The English program, *First Edition*, is produced and hosted by Wojtek Gwiazda, a familiar name to fans of his popular morning show to the United States – *North Country*. The program goes out live at 0500 UTC, the early hours of the morning at RCI's Montreal studios, when the place isn't exactly overflowing with personnel.

The poverty of resources can readily be heard on *First Edition*, since Gwiazda's is the only voice heard on the program. He reads the news, weather, stock market report and sports news, followed by the current affairs portion of the program, and a news summary at the end. Not the best of production values, to say the least, and it shows. The old sparkle and enthusiasm from Gwiazda's days on *North Country* just don't seem to be there anymore, and that is a very great shame. In better times Gwiazda was one of RCI's best and most enthusiastic on-air personalities.

The target for the current fiscal year is to increase original programming by another twenty-five percent. Currently under development are new French and English programs targeted to Africa.

This past spring, a new relay to China, via Singapore, was inaugurated to beam RCI's Chinese service to northern China. This area was not well served in terms of signal quality and listening time by the existing relay, which only covered southern China well. A good deal of effort is also being put into reaching listeners via programming supplied to local stations on compact discs. 5,500 CDs are sent out each week as well as another 5,000 on a monthly basis to 250 local stations in 64 countries.

## Becoming better known on the home front

Another of RCI's key strategies for the future is to achieve a much higher profile amongst its important domestic constituency, the Canadian public. At the time of the first few attempts to close RCI down, there was little reaction from the media and Canadian at large within Canada, except for those who happened to be SW listeners. As with anything, people don't tend to lament the loss of something they aren't even aware exists.

Fortunately for RCI, the level of awareness has improved greatly in recent years. The service is also looking to develop programming that better reflects the realities of Canada: programming for women, children and young people, along with programs oriented to business and finance.

## RCI's future in its own hands

Bob O'Reilly feels very strongly that RCI's future is very much tied to itself. While he emphasizes that he doesn't feel worried or threatened at the moment, he says, "RCI will have to prove to the government, the nation's business community, as well as to the Canadian public, that the service is of value. To justify the great



Gwiazda in 1987



A collection of some of Radio Canada International's QSL cards over the years.

support that RCI has received from cabinet ministers such as the Minister of Foreign Affairs and the Heritage Minister, as well as key civil servants, we need to give them some documentation to show what RCI has done with the resources it has been given." He adds proudly, "We've made significant inroads in being able to do that."

### What goes around, comes around

Early in the next century, which is now just a few months away, RCI staff and management will be getting something of a fresh start. The service will be moving into brand new offices now under construction in a recently completed annex to the main Montreal headquarters building of the CBC.

This will bring RCI more or less full circle. Back in the mid-seventies when the new CBC broadcasting center was opened in Montreal's east end, RCI occupied most of four floors in the center tower. In fact, the first radio broadcast to emanate from the new center was RCI's morning broadcast to the United States, with this writer as the producer. How things have changed for RCI since that broadcast aired! RCI's new home will all be on one floor.

### Challenging times ahead

In the coming years, says RCI Director Bob O'Reilly, he'll be looking into many innovative ways to get additional funding to enable the service to increase original programming and to try new things. In

the meantime, he plans to make the best possible use of the funding that RCI already has.

Shortwave will for many years continue to be the mainstay of RCI's broadcasting activities, but like so many other international broadcasters, they are taking full advantage of new media such as the Internet to reach new listeners around the world.

RCI management had to take a very low key approach to celebrations marking the service's auspicious fiftieth anniversary back in 1995, given the precarious nature of their existence at the time. Let's hope that they can make up for that with a more enthusiastic and less self-conscious celebration of their fifty-fifth anniversary in the first year of the new century! The RCI phoenix has risen from the ashes far too many times in recent years. The time has come for it to stay in the air, and on the air!

*Ian McFarland is a former producer and host for Radio Canada International and Radio Japan. Now retired, Ian heads Marbian Productions, a venture dedicated to the promotion of shortwave broadcasting.*



## Radio Canada International Then ..... Year 2000



*RCI's master control room*



*The newsroom at RCI*



*RCI's digital studio*





# TRACKER TIPS

## Hints, Tips, and Tricks for using your TrunkTracker Scanner

By Laura Quarantiello

**W**hen Uniden introduced the BC-235XLT TrunkTracker scanner two years ago, the hearts of true blue scanner listeners everywhere skipped a beat. Just when we were falling into the "same-old" syndrome and growing frustrated trying to monitor complex 800 megahertz systems, here was a reason to go on. Reborn with fresh purpose, many of us went out and cracked our checkbooks to purchase a Uniden or Radio Shack TrunkTracker. If 1997 was the beginning of a new scanning age, 1998 was definitely the year of the Trackers.

Discussions on Internet and online service areas devoted to scanning are rife with information on trunked system monitoring and new web sites on the topic pop up every day. You can even get a daily dose of trunking information with the e-mail Trunkcom list. With the rebirth of scanning, neophytes are joining the hobby in droves. While basic information on scanning is readily available, tips for trunktracking are slower to make the rounds.

I'll be the first to admit that I'm not a "nuts and volts" kind of gal. If it can't be easily done from the keyboard, I don't want to do it. So when the first questions about modifications for TrunkTracker scanners began to appear, I read them with only partial interest. When you have a screwdriver phobia, you don't feed it by reading about all the good things that can be done behind a scanner's back panel.

Surprisingly, however, I found that many of the tips and tricks I was reading about had nothing to do with taking these new scanners apart, but more about learning how to creatively use them to monitor trunked systems. My electronic surgery aversion diverted, I began to compile a list to add to my TrunkTracker notebook. I thought I'd share what I've learned with you:

### Tips for Trackers

The TrunkTrackers are probably the newest scanning phenomenon since the change from crystals to synthesized programming. Suddenly we've been handed a whole differ-

ent way of doing things. Instead of a single frequency for a single service, we now have a series of frequencies being used by several – and in some cases dozens – of services.

What's even worse, any frequency can be used by any service and once a user unkeys his microphone, the evil site controller can and often does flip the reply to another frequency. Trying to track this with a conventional scanner will give you ulcers. Fortunately, TrunkTrackers make it all easy.

*If you haven't read the manual that came with your unit, do so.* Then read it again. Some of the problems that users are reporting can be fixed simply by reading about the proper way to do things.

For instance, a common complaint is that the *TrunkTracker fails to acquire the data channel when first locking into a trunked system*. The manual says that the squelch setting doesn't matter during trunked monitoring, but it also says that a squelch setting that is too high will cause the unit to fail to or delay acquisition of the data channel. When I'm about to select a trunking bank, I rotate the squelch to zero (that is, clockwise – not counterclockwise like the line on the scanner seems to indicate).

Another common question relates to *entering frequencies into a trunking bank*. You must press and hold the Trunk key until you hear two beeps. Then you must punch the button of the bank you wish to begin entering frequencies into. Too many users are trying to enter trunked frequencies without setting the scanner into trunked mode first. Sure, this is all in the operating guide, but people are still making the mistake.

Here are two tips that aren't in the manual: *it isn't necessary to enter a decimal in the frequency you're loading* – unless you're entering a frequency between 29 and 54 MHz. Did you know that if you lock out the Priority channel in a bank and then attempt to select Priority on the keyboard, a message will appear saying "PCHLOCOUT"? Nice touch. Also, if you're in Scan List mode and you push the Priority key, the *activity display bars will change to reflect activity on the*

*system, rather than Scan List banks.*

One tip that is in the operating guide, but still seems to give users fits is this: *if you lock out an ID during Search, it will also be locked out of your Scan List*. And vice versa. For this very reason, some users recommend devoting two scanner banks to the same system. Simply enter the same frequencies in both banks. One bank is used strictly for searching for new talkgroups and locking them out as they are confirmed, the second bank is used for general listening with all talkgroups enabled.

Listeners that are in areas that have a large amount of talkgroups on their system report that this method allows them to monitor their favorite talkgroups during the day and search for new groups at night when animal control,



building maintenance, and every other Tom, Dick and Harriet aren't tying up the airwaves.

When setting up a trunking bank, you may be one of the lucky ones that ends up with some of the thirty channels left unused. Instead of letting them go to waste, *consider entering non-trunked frequencies in these remaining open channels*. Then lock out the trunked frequencies. What this does is enables you to switch to conventional mode and scan only the conventional freqs, while still being able to switch to trunked mode on that bank and trunk track as usual.

### Playing the Keyboard

There's a group of strange individuals out there who spend an inordinate amount of time trying different combinations of keyboard commands. Their results are both intriguing and useful. Here's what they've come up with:

- On both the Uniden BC-235 and BC-895, if you depress the 2,9, and Manual while

turning on the scanner the message "Uniden" will scroll across the display, followed by a clearing of all radio memory locations. On the Radio Shack PRO-90, this same keyboard combination will display "clear" and proceed to clear all memory locations. Users in the know recommend that you do this when you first bring your newly purchased scanner home.

- On all TrunkTracker radios, pressing 2,9 and 0 while turning on the scanner invokes an LCD display test. If you press any key while this test is going on, factory test frequencies will be automatically loaded.
- On all of the TrunkTracker radios, pressing 2,9 and Scan simultaneously while turning on the scanner produces a "Load" message on the LCD display and loads test frequencies into channels 1 through 19.
- On the BC-235 and BC-895, pressing the

Manual button and holding it down will force the scanner to cycle through each channel, one at a time including locked out channels, in each bank. The Limit and Hold buttons also enable this function. The scanner will not stop on active channels during this procedure, so don't expect to hear voice traffic.

### Keep on Trunking

Trunked systems are here to stay, and TrunkTracker scanners are the only game in town for listeners. These tips are designed to help the newcomer get started in trunk tracking, but we've only scratched the surface of what's out there. Do you have any keyboard tricks or operating tips for your TrunkTracker? Send them in care of this magazine and we'll pass them along to MT readers!

.....  
Laura Quarantiello has written feature articles and columns on the topic of scanning for *Monitoring Times* and other magazines, as well as authoring books on the subject.

# Trunk Tracking a la BC-245

By Larry Van Horn

It is not often I get excited about a new scanner entering the marketplace. Those who have talked to me on the Grove Technical Support lines over the years know that I am one picky individual. Last year the BC-895 got me to part with some of my cash. In fact, that was the first Uniden scanner I'd bought in 36 years as a radio hobbyist, and it's one mighty fine radio.

Now it looks like Uniden has done it again. I'm close to parting with more of my radio cash stash for the BC-245. But I'm not the only one thinking along those lines; hundreds of these radios have already been sold, and our tech line has been ringing off the hook helping customers get used to their new '245 scanner digs.

After almost a month of answering tech calls, I've compiled some of the more frequently asked questions about the BC-245XLT and trunk tracking.

Especially in the first days after its release, problems were often solved with the help of several internet scanner groups. We would like to extend a special thanks to Rich Wells and his BC-245XLT message board and

participants (<http://www.strongsignals.net>); Gregg Knox; Richard Barnett, the list owner; and participants of the Trunkcom newsgroup (<http://www.qth.net>); the BC-245XLT list (<http://www.onelist.com/subscribe/BC245XLT>); and the T2 list (<http://www.onelist.com/subscribe/T2>).

So let's take a closer look at some of your most frequently asked questions on the new BC-245XLT (also called the Trunktracker II or T2).

**Q. I can't get my scanner to trunk track and it is hard to program. What can you do for me?**

**A.** As Laura said above, it's time to do something most people don't do enough of—read the manual. Chances are you are not punching the proper keys. A common mistake made by most (I'm also guilty) is programming the 800 trunking channels into the trunk tracker in the conventional mode instead of the trunk tracking mode.

Speaking of the manual, there are six

known errors in the manual. Per the Strong Signals website they are:

- #1: Page 52. Says "press MAN" when it should say "press SCAN."
- #2: Page 54. Step 1 says "press SCAN" when it should say "press HOLD."
- #3: Page 41. Step 6 says to repeat "steps 3 and 4" when it should say "steps 4 and 5."

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#4: Page 61. Says "hold for two seconds" when it should say "hold SCAN for two seconds."

#5: Page 62. Says "You may need a DB-9 to DB-25 null modem adapter, available at most computer stores." This sentence should be removed.

#6: Page 31. Step 9 says "pressing E" when it should say "pressing MAN."

While not an error, Dave McCormick found wording on page 72 which is confusing. The syntax used in step 1 could be clearer. Dave submits the following to replace Step 1:

"On each scanner, press 3 or press LIMIT/Down or HOLD/Up until this screen is displayed on both scanners, and then press E. Following either path will take you to the screen which displays "FirSt" as mentioned in step 3."

### **Q. Where can I get frequency and talk group ID information for my area, especially for an Ericsson trunking system?**

**A.** Since this technology is relatively new, especially trunking EDACS, you might not have a lot of information available. So, welcome to the new world of trunk scanning. You basically have three choices if the information in the Bearcat National Public Safety Trunked System Frequency Guide isn't working.

1. Search around the internet and hope that someone has posted correct information about the systems in your area.
2. Turn off the scanner and wait/hope that someone in your area evidently figures out your system, or
3. Figure it out yourself. This last option is the hardest thing to get scanner listeners to do, but it can be the most rewarding if you are willing to invest some time and energy.

The manual does list a couple of websites to try for more information if you are internet active, but the three that I highly recommend and visit regularly to help our customers out are:

<http://gtrac.ztn.net/>

Terence Brennan and Sean Sullivan, the developers of the EDACS portion of the BC-245 trunking radio have put this website online. For the latest EDACS info, there is no better.

<http://home.att.net/~wwhitby/>

Warren Whitby has an excellent all around site devoted to trunking radio systems. If you can't find it here, it probably isn't available.

<http://www.lcblanton.com/trunked.htm>

If you live in the Southeast United States, don't miss Lindsay Blanton's website. It is a must visit.

### **Disconnect Tone Function**

This is one of the more interesting features of the trunk tracker series of radios, but the manuals do not explain this function very well. Here is an excellent explanation from trunk tracker developer Gregg Knox of this under-documented feature:

"The T2 scanner does have the Disconnect Tone Detect function on the SVC button. Here is what it really does: Normally, when the scanner is tuned to the voice channel listening to a conversation, it is also looking for a disconnect sequence which is embedded in the low frequency range of the voice signal. When the person transmitting releases his push-to-talk button, the system transmits the disconnect sequence over the voice channel. When the radio sees this signal it returns to the control channel to find out what voice channel the conversation has moved to or to find another conversation. This usually works very well and you don't hear any squelch tail as a result.

"However, some talk groups tend to be plagued by a problem which causes the radio to detect the disconnect sequence when it's not really there and so the radio jumps back and forth between the control channel and the conversation, chopping up the audio. The reason for this seems to be overmodulation, causing splatter into the subaudible range where the disconnect sequence resides (that's my best guess; we don't really know the cause). This interference can apparently look like a disconnect sequence to the radio, hence the problem.

"Lots of users complained about this on the original BC235 so we thought we would try to fix it. The solution was to provide an alternate method of detecting when the radio



should return to the control channel. As you might have guessed, the way to do this is to simply use the conventional squelch control.

"If you deselect the default disconnect sequence method, then the scanner will no longer even look for the disconnect sequence. Rather it will only return to the control channel when the squelch closes. This works almost as well as the disconnect sequence does, except you will get a noticeable squelch tail, but it is not confused by overmodulation like the disconnect sequence method.

"When the data icon is flashing, you are using the conventional squelch method. When you use this you must make sure your squelch control is set correctly. While listening to a trunk conversation, turn the squelch control fully clockwise. When the conversation ends, the radio will not return to the control channel and you will hear noise. Turn the squelch counter clockwise until the noise disappears and the radio returns to the control channel. That's about where you want the squelch set. The bottom line is; if the disconnect sequence method works for you don't defeat it, it's the best method."

If you purchased your 245 from Grove and are having problems, be sure to give our fine technical department – Sue Hamby, Chanel Cordell, Bob Grove and myself – a call. As an old Navy chief use to say, "The only dumb question is the one you didn't ask."

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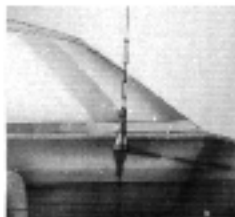
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# Tape Recording from the Radio

By Douglas A. Blakeslee, N1RM

**Y**ou wouldn't think that hooking a tape recorder to a shortwave receiver or to a scanner would be a major task. It isn't, but you may have to cope with several problems, including unequal audio levels, hum on the audio, interference from external radio-frequency (RF) sources, and timing the tape recorder for unattended operation.

This writer had enjoyed a small Sony recorder for almost 20 years. It was repaired several times, but finally had to be passed on to tape recorder heaven. When Radio Shack put their CTR-101 on sale for less than \$30, one went right home and into the radio room. A feature of the CTR-101 that the Sony didn't have is a VOX circuit. VOX, an abbreviation for *voice operated relay*, turns the recorder only when an audio signal is received, so that you don't use up a lot of tape monitoring a channel with little activity.

## Audio Level

Some receivers and scanners have a separate audio output for use with a tape recorder. Most do not. The typical tape recorder output is a high impedance, low fixed-level audio that doesn't really cure any of the problems encountered in making a recorder mate with a radio.

You can plug the tape recorder into the headphone jack of the receiver, but then you cannot listen to what is being recorded. A better approach is to use the external

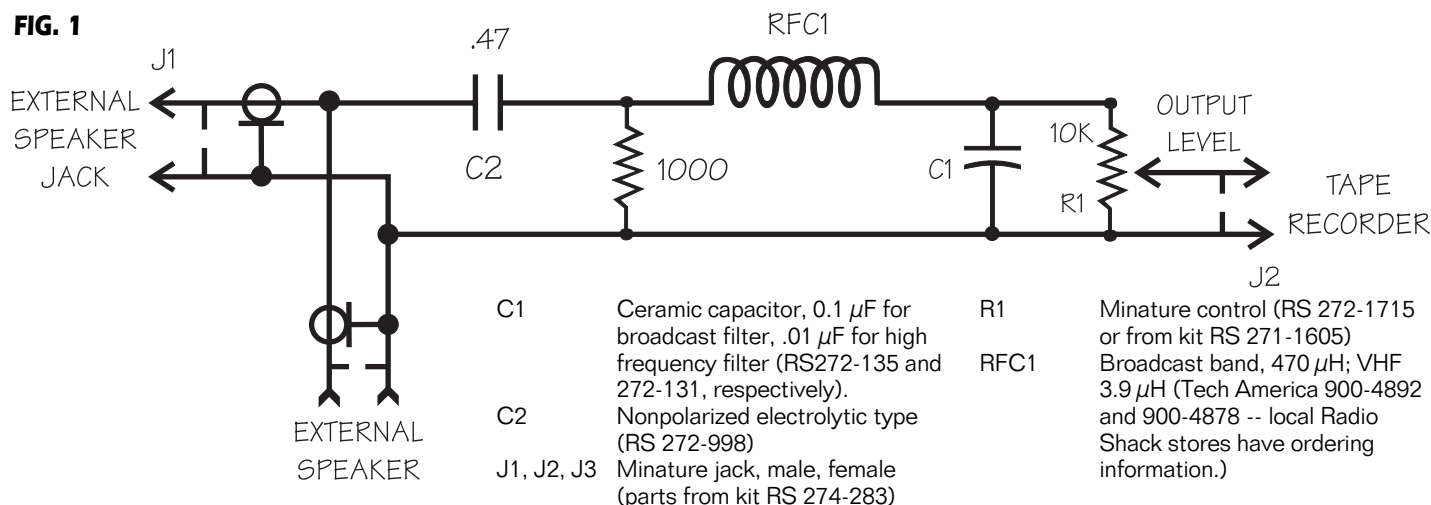


*Why spend the extra money to purchase a radio with a built-in cassette recorder? For around \$30 you can purchase a voice-activated tape recorder, like the Radio Shack CTR-101 shown below, to manually connect to your radio.*



*The audio interface for the recorder, along with an RF filter, are wired together and then encapsulated with silicon sealer, except for the level control.*

**FIG. 1**



*Schematic diagram of the audio interface and rf filter. RS part numbers are from the Radio Shack 1998 catalog.*

speaker jack via a "Y" cable that connects to the recorder and an external speaker simultaneously. In this way you can monitor what is going on while recording.

The audio level at the speaker jack will overload the input of most modern tape recorders. Thus, a separate adjustment of the audio level fed to the recorder is needed: R1 in Fig. 1. This independent adjustment for audio level is especially important in recorders with VOX circuitry so that they don't trigger on noise and low level signals. The audio level control of the recorder may not provide this function, depending on the design of the unit. So, an external control is the best approach.

### Audio Hum

Most modern receivers utilize an integrated-circuit audio output amplifier. Because they are not balanced circuits, they often contain a large audio (ac) hum content. The low frequency growl, which would do justice to a guard dog, isn't heard because the small speakers utilized in most radios don't reproduce the low audio frequencies. Some scanners also have an audio "popping" sound each time they switch channels. While you may not notice all of the low frequency audio garbage, the tape recorder does and records it for posterity.

A simple cure for these problems is a capacitor/resistor input circuit (Fig. 1) which attenuates audio below 300 Hz. In this way, the low frequencies don't reach the recorder.

### RF Interference

If you live far from any commercial broadcast stations, you can skip this section. For the rest of us who dwell near a population center, broadcast and FM radio plus TV transmissions can interfere with our radio/recorder combination.

In simple terms, the high level commercial signals flow through the ground circuits of the radio and into the input of the recorder. The highly sensitive input trans-

sistors of the tape machine rectify the signal and it shows up as interference on the tape. The simple cure is an RF filter at the input to the recorder, consisting of an inductor and a capacitor. Two filters are described in Fig. 1, one for broadcast band interference and the other to eliminate problems from FM broadcast and TV transmitters.

The simple test approach is to connect the audio interface to the tape recorder and try it. If RF interference is noted, identify the offender and add the appropriate filter.

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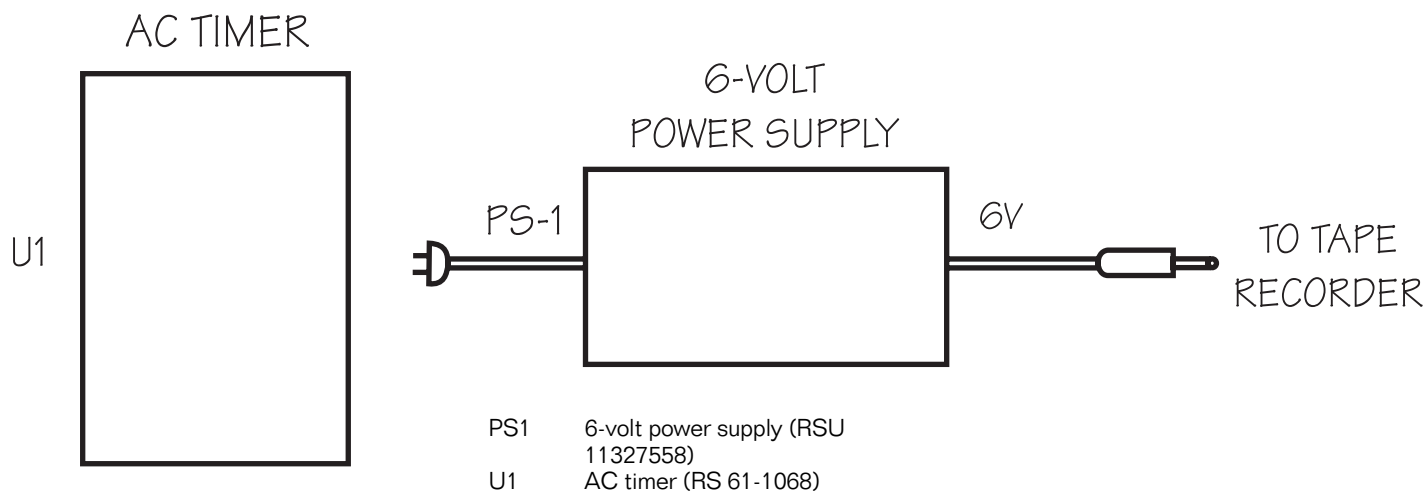
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**FIG. 2** -Diagram of the timer control of the tape recorder. RS part numbers are from the Radio Shack 1998 catalog.

### Timing

Those of us who work for a living or go to school can't stay up night after night awaiting that rare station that we want as a catch for the log and for a QSL. An alternative that allows sleep at night is to set your receiver for the desired channel and put a timing function on the recorder so it monitors for you at the appropriate time.

To have the recorder work unattended, a hookup similar to Fig. 2 can be employed. A simple ac timer is employed along with a dc supply for the recorder (usually 6 volts). The timer can be a simple unit with push

pins to set the time or a more advanced digital unit. The only difference is the accuracy with which the time-on and time-off functions can be set.

To put it another way, if you use a simple timer you probably waste some tape, as you have to allow for the inaccuracy of the timer by starting earlier and ending later. As most often the tape is going to be erased anyway, it probably doesn't matter.

This writer used this approach to "capture" a broadcaster on 3 MHz from Micronesia, always a difficult path from the East Coast of the U.S. For 20 days nothing was heard when the tape was reviewed. On the 21st, there was the signal loud and clear.

With the tape in hand, there is never any question of what was heard. Some years ago this writer had an exchange of correspondence with the Chief Engineer at the Singapore Broadcasting Corporation. He claimed that reception should not be possible at the times I reported. I made copies of my tapes and sent them on to Singapore. I received a gracious reply stating that clearly there were propagation modes at work which

were not understood by his technical people.

If a picture is worth 1000 words, perhaps a tape is worth every spoken word.

### Interface Circuits

Construction of the audio interface and RF suppression networks are components soldered directly to the interface audio cables. The cable should be the shielded audio type. One could build such circuitry into a shielded box with appropriate connectors. This approach would triple the cost for no improvement in performance.

Here, once the components are soldered together, they are encapsulated in silicon sealer, the type used to encase antenna connectors. Ugly, yes. Low cost, yes.

The adjustment procedure is straightforward. Set the receiver or scanner for a moderate listening volume. Turn on the tape recorder. Set R1 until the background signals do not trigger the recorder's VOX circuit, but the recorder starts for signals of desired level. This may take some juggling of the input volume control on the recorder and R1 for best VOX operation.

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Our new Bearcat TrunkTracker BC245XLT, is the world's first scanner designed to track Motorola Type I, Type II, Hybrid, SMARTNET, PRIVACY PLUS and EDACS analog trunking systems on any band. Now, follow UHF High Band, UHF 800/900 MHz trunked public safety and public service systems just as if conventional two-way communications were used. Our scanner offers many new benefits such as Multi-Track - Track more than one trunking system at a time and scan conventional and trunked systems at the same time. 300 Channels - Program one frequency into each channel. 12 Bands, 10 Banks - Includes 12 bands, with Aircraft and 800 MHz, 10 banks with 30 channels each are useful for storing similar frequencies to maintain faster scanning cycles or for storing all the frequencies of a trunked system. Smart Scanner - Automatically program your BC245XLT with all the frequencies and trunking talk groups for your local area by accessing the Bearcat national database with your PC. If you do not have a PC simply use an external modem. Turbo Search - Increases the search speed to 300 steps per second when monitoring frequency bands with 5 KHz. steps. 10 Priority Channels - You can assign one priority channel in each bank. Assigning a priority channel allows you to keep track of activity on your most important channels while monitoring other channels for transmissions. Preprogrammed Service (SVC) Search - Allows you to toggle through preprogrammed police, fire/emergency, railroad, aircraft, marine, and weather frequencies. Unique Data Skip - Allows your scanner to skip unwanted data transmissions and reduces unwanted beeps. Memory Backup - If the battery completely discharges or if power is disconnected, the frequencies programmed in your scanner are retained in memory. Manual Channel Access - Go directly to any channel. LCD Back Light - An LCD light remains on for 15 seconds when the back light key is pressed. AutoLight - Automatically turns the backlight on when your scanner stops on a transmission. Battery Save - In manual mode, the BC245XLT automatically reduces its power requirements to extend the battery's charge. Attenuator - Reduces the signal strength to help prevent signal overload. The BC245XLT also works as a conventional scanner. Now it's easy to continuously monitor many radio conversations even though the message is switching frequencies. The BC245XLT comes with AC adapter, one rechargeable long life ni-cad battery pack, belt clip, flexible rubber antenna, earphone, RS232C cable, Trunk Tracker frequency guide, owner's manual and one year limited Uniden warranty. Not compatible with AGEIS, ASTRO, ESAS or LTR systems. Hear more action on your radio scanner today. Call CEI now at 1-800-USA-SCAN to order your BC245XLT radio scanner.



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Bearcat BCT12-A2 StormTracker info mobile scanner .....\$144.95

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### Bearcat®3000XLT-A Radio Scanner

Mfg. suggested list price \$699.95/Special \$329.95

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Frequency Transfer • VFO Control • Automatic Store

10 Priority Channels • Selectable Mode • Data Skip

Frequency step resolution 5, 12.5 & 25 KHz.

Size: 2-3/4" Wide x 1-1/2" Deep x 7-3/8" High

Frequency Coverage: 25,000-549,995 MHz., 760,000-823,995 MHz., 849,0125-868,995 MHz., 894,0125-1,300,000 MHz.

The Bearcat 3000XLT is the ideal handheld radio scanner for communications professionals. This handheld scanner scans at 100 channels per second and searches at a rate up to 300 steps per second. A selectable attenuator eliminates annoying intermodulation from adjacent frequencies in highly populated areas. Selectable AM, Wide FM and Narrow FM modes allow you to change the default receiving mode of the BC3000XLT. For maximum scanning pleasure, order the following optional accessories: UA502 Cigarette lighter power cord for temporary operation from your vehicle's cigarette lighter \$14.95; LC3000 Deluxe swivel leather carrying case \$49.95; BP2500 rechargeable nickel-cadmium battery pack for up to five hours of dependable use \$39.95; ANTIMBNC Magnetic mount scanner antenna with BNC jack and 12 feet of cable \$29.95. ANTSGNRC Glass mount scanner antenna with BNC cable \$29.95. The BC3000XLT comes with AC adapter, belt clip, flexible rubber antenna, earphone, owner's manual and one year limited Uniden warranty. Order today.

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### The Good Old Days

I was walking past a store under renovation in my hometown recently and there, behind a semi-boarded up window was a stack of office furniture, various knick-knacks and two ancient Regency crystal scanners. A sign sat atop the pile, "Make an offer." I went inside and found the owner and offered \$20 for the two radios. He gladly took it. He had found them in the basement during construction and decided that, as crystal units, they were worthless to him.

The scanners were 10-channel radios, but lacked any model number (time to give Mr. Parnass a call!). I'll probably never use the scanners. They'll sit on a shelf somewhere along with my slowly growing collection of "antique" receivers. But that's OK. It sounds corny, but looking at these radios brings me back to a simpler time, both in my life and in the life of this hobby.

Remember when there was no trunking and no digital? When departments had, at most, a handful of frequencies you needed to monitor? Sure, you oftentimes couldn't hear the mobiles, but that made for the challenge of finding the perfect antenna.

These "glory" days for the hobby, from the mid 70s to the mid 80s, were brought back to me in a recent e-mail from Harry Marnell. I asked Harry if I could re-print his e-mail for the MT readers to enjoy:

"Sure, Rich, that would be fine. I left LAPD in 1975, but have tried to stay on top of their Comm developments. My wife retired last year from Communications Division after 31-1/2 years, so I've managed to keep tabs on the stuff!"

Harry's e-mail was sparked by a question from a fellow member of the SCAN-L mailing list on the Net. Evan, the message poster, pondered:

"Was watching Adam 12 for the first time in a while the other day. I noticed that the Adam-12 units cannot hear the other units. Was this accurate for LA in the 70s? Were they on simplex and basically unless the car was within a few miles you wouldn't hear them? This didn't seem accurate, as I heard something along the lines of:

*DISPATCH: "X-RAY 44 go ahead"*

*<pause>*

*DISPATCH: "X-Ray 44 10-4. Adam-12?"*

*A-12: "Adam 12 go ahead"*

*DISPATCH: "Adam 12, X-ray 44 wants you to switch to (some channel)."*

*A-12 "10-4"*

*<changes channel on radio and they talk to each other, loud and clear>*

"Just curious. Did they use a separate transmit channel, and just not 'repeat' it like a repeater?"

Harry responded with this great report that goes far to illustrate how LAPD communications worked, and thus how local hobbyists monitored:

"Essentially you're right... while on the dispatch channel, the units couldn't hear each other. Until they put in second receivers in *some* cars. Looking at it now, where repeaters are in use everywhere, it's amazing it didn't cause more problems than it did. Like everything else, I guess everyone pretty much recognized what the system did (and didn't do), and learned to work accordingly.

"Here's how it worked in the VHF days. By the way, LAPD never went to 9- 10- or 11- codes like most agencies, always stayed with plain language...though we did have plenty of 'codes.'

"There were five Dispatch 'talkout' frequencies (A, B, C, D & E) in the 158-159 MHz range. All mobile 'talk-in' freqs were in the 154-156 MHz range, and numbered (Freq 1, Freq 2....).

#### ■ Dispatch Freq Set-Up:

"The units' radios were really two-frequency simplex. Rampart Division cars, for example, would transmit on Freq 2 - 154.965, and receive on Freq A - 159.15; the receiver would be muted when they transmitted. But they only received the dispatcher's freq, not the other cars.

"Meanwhile, at Communications Division, it was semi-duplex; that is the Rampart RTO (dispatcher, or radio-telecommunications officer) would receive 154.965 and transmit back on 159.15. But the RTO could receive the units *while* he/she was transmitting... a good idea if it was a long transmission. If somebody needed help, the RTO could receive it in mid-broadcast and handle that instead.

"And, as there were only five talk-out

frequencies for the entire city (17 divisions plus traffic and motors), the RTOs had to share their talk-out freq with up to six other RTOs. There was an electro-mechanical rotator that gave each RTO the frequency in sequence, if they had their foot on the TX (transmit) pedal. ("Stomp-to-Talk" ?) Two problems with that were... on a busy night it could literally be 1 or 2 minutes until you 'got the air' to acknowledge your units and broadcast your calls; also, the officers had to hear all the RTOs that used their particular dispatch (talk-out) channel.

"There were also two Tactical car-to-car frequencies which were straight simplex - one frequency - push to talk, release to listen. No repeaters, but with 70 watts the units could talk over several miles. Portable radios were few and far between in the VHF days (up until the early eighties).

"Your question about the cars hearing each other on the dispatch channel... that was a big issue. It was solved, in a sense, by installing second receivers in many cars, tuned to the 'mobile talk-in' freq. This eliminated a lot of the interference they'd otherwise cause each other. And occasionally a unit would hear a transmission the RTO didn't receive clearly.

"So, yes, the transmissions you described *could* have happened in real life. Would have been something like... from the officers' ear-point:

*DISPATCHER: "1-Xray-44 go ahead."*

*<pause>*

*DISPATCHER: "1-Xray-44 roger; 1-Adam-12 come-in"*

*A-12: "Adam-12, go ahead."*

*DISPATCHER: "1-Adam-12, switch to Tac 2 for 1-Xray-44"*

and off they'd go to the simplex frequency to find the nearest donut shop." (Ouch, Harry!)

#### ■ Scanner Marketing 101 Follow-up

In a column earlier this year we asked readers to propose ideas on ways to boost interest in scanning, particularly among those who have never "scanned" before. We'll print a couple of the responses this month and one or two in coming issues. The first letter comes from Kevin (last name incom-



plete on the e-mail):

"Great marketing article, and excellent questions. Here's my input:

**1. What group of new users...** (could be most easily enticed by the hobby)? All of the people who watch the FOX network's "reality programming" shows, like *Cops* or the *Scariest Videos of the Week*, etc. I feel these audiences have shown an extraordinary appetite for the 'on the spot' drama we scanner enthusiasts have enjoyed for years.

**2. What types of features...** (would make it more interesting for consumers)? Another easy one! Just look around at other high tech success stories. How can scanners be more like Nintendo game systems or microwave ovens?

I do have some suggestions: Sell plug-in cartridges with preprogrammed frequency groups, like a Nintendo game cartridge. Make the scanner the "reality programming player" then sell frequency carts that give access to different standard bands of service activity (police, fire, etc.). Since each town, county, system, etc. is slightly different, the potential market for "reality segment cartridges" is huge. Consumers have already demonstrated a tolerance for purchasing low and mid priced game cartridges, and I feel that e-prom technology should be able to accommodate this concept.

### 3. Does the scanner have to be... ?

A consumer level scanner should be no more difficult to program than a microwave oven. What buttons do I have to push to reheat my coffee? That is the highest level of programming complexity consumers have demonstrated a dependable tolerance for, so accommodate them! Sacrifice access to arcane freqs and provide ease of use.

### 4. How do you currently interest... ?

The same way FOX does - I give people info they can't get anywhere else. "I heard on the CB that the truckers say there's an accident..." or "I've heard a lot of police calls from officers who seem to be citing drivers for speeding on main street." While always being mindful of laws prohibiting disclosure of information obtained while scanning, of course!

### 5. How would you go about telling... ?

I would place ads on FOX during 'Cops' - "Now YOU can HEAR the action ANYTIME, ANYWHERE, with the new Bearcat reality player and HOT NEW Freq paks!

(individual frequency cartridges sold separately, batteries not included, certain frequencies not available to U.S. residents).

Very interesting. A variation of the frequency pak concept is being implemented by Uniden with their SmartScanner technology. We'll keep tabs on that to see how it performs.

And here's our second letter: "Hi Richard. This from Radio Bob at RBCN, North American shortwave pirate and MT subscriber. May issue terrific all around. Enjoyed your article and here's your reader feedback as requested regarding scanners.

"1) New users? Tough one, probably computer users who happen upon radio related sites. Suggest scanner manufacturers *advertise* there. 2) Features? Same as anything else: easy to use as possible, (good) quality and low price. 3) User friendly? A "new" user isn't going to know the difference 'cause they're *new* to it. 4) Interest others? Honestly, I'm not a scanner promoter. Know any manufacturers that want to put me on their payroll? 5) Tell public? ADVERTISE. I've *never* seen an ad for scanners on TV, radio etc... All other prod-

ucts get advertised to the general public, why should scanners be any different? Thanks for your time."

### ■ Sporting Frequencies

Todd Hartzel, a fine and frequent contributor to the TrunkCom mailing list, posted the following material on perhaps the most exciting baseball venue in the country (particularly last year), Busch Stadium in St. Louis.

"Greetings, Everyone. For those in a 25 mile range of downtown St. Louis, Missouri, you can monitor the behind-the-scene activities at Busch Stadium. Busch Stadium doesn't have their own trunked radio system; instead they are a Business Trunk user on Nextel's downtown TRS (which means they could move to Nextel or another radio system at any time). Here is a run-down on the specs of this single-site TRS:"

**Callsign:** WNDX367  
**Location:** 720 Olive Street (7th & Olive), St Louis, Mo (on the Laclede Gas Building)  
**System:** Motorola Type I  
**Fleetmap:** USR, b0 = S-1; b1, b2, b3 & b6 = S-7; b4 & b5 = S-8; b7 = S-4

# TrunkTrac®

## New Version 5.2

TrunkTrac, the first, and one of the most sophisticated trunk tracking technologies available, is now even better. New pricing and additional features make TrunkTrac your best choice if you're serious about tracking Motorola Type I, II, III, and Hybrid systems. TrunkTrac now supports the BC895XLT, PCR1000, R7000, R7100, R8500, R9000, and the RS Pro 20xx series with an OS456/535 board installed.

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## Frequencies:

852.0125 852.3875 853.0125 853.0375  
856.0375 857.0375 858.0375 859.0375  
860.0375 861.5375 862.5375 863.5375  
864.5375 865.5375

## Busch Stadium talkgroups:

410-1 -- Channel A / Security / Operations  
/ Guest Relations / Ushers  
410-2 -- Channel B / SportService / Con-  
cessions  
410-3 -- Channel C / Stadium Parking /  
Maintenance

## More Sports

(Found on the Net): At a recent hockey game at the National Car Rental Center in Sunrise, Florida, the following frequencies were noted:

461.0375  
461.050  
461.0625 maintenance  
461.2875  
461.3375  
461.6875  
461.9125  
462.0125  
463.3125  
463.6125  
464.300  
464.4375 seemed to be the busiest freq.  
464.550 photographers or TV camera setups  
464.700  
855.4875 Sunrise Police Dept. / for security

## Digital File

As the list of digital-only systems around the country gradually grows, we can add the following web site to those which been helpful in addressing the concerns of scanner hobbyists in regard to the trend.

"I have revamped my Lexington Digital page at <http://www.qsl.net/kf4kpr/lexdigi.htm>. It now includes the article that the local paper did on the objections to a digital system that some of the scanner enthusiasts in the Columbia, South Carolina, area have expressed. The Lexington Digital Page is part of my SCANA system information page at <http://www.qsl.net/kf4kpr/trunked.htm>."

George R. Chisenhall, Jr., Amateur Radio Call KF4KPR, [chis@mindspring.com](mailto:chis@mindspring.com) or [kf4kpr@qsl.net](mailto:kf4kpr@qsl.net)

## We're Back in Halifax Again

We've had a great many reports on Halifax, Nova Scotia, of late, due in part to the air tragedy off its shores last year. Here, for the first time, are details on the current Halifax trunking system. You may remem-

ber from recent articles that the province intends to go to a digital trunked system within a few years. This report, from Douglas McDougall, will be our last on Halifax.

## Halifax Regional Municipality

**Location:** Halifax, Nova Scotia, Canada  
**System:** Motorola Type II  
**Use:** Police Department, Fire Department, City Departments, Metro Transit Inspectors and Repair

## Frequencies:

862.6375, 862.7375, 862.8875, 862.9875,  
863.1375, 863.2375, 863.3875, 863.4875,  
863.6375, 863.7375 863.8875, 863.9875,  
864.1375, 864.2375, 864.3875, 864.4875,  
864.6375, 864.7375, 864.8875, 864.9875

## Fire Operations:

Halifax Regional Fire (Company 2)	1200
Halifax Regional Fire (Company 3)	1232
Halifax Regional Fire (Company 4)	1264
Halifax Regional Fire (Company 5)	1296
Halifax Regional Fire (Company 6)	1328
Halifax Regional Fire (Company 7)	1360
Halifax Regional Fire (Company 8)	1392
Halifax Regional Fire (Company 9)	1424
Halifax Regional Fire (Company 10)	1456
Halifax Regional Fire (Company 11)	1488
Halifax Regional Fire (Company 12)	1520
Halifax Regional Fire (Company 13)	1552
Halifax Regional Fire (Company 14)	1584
Halifax Regional Fire (Company 15)	1616
Halifax Regional Fire (Company 16)	1648
Halifax Regional Fire (Company 17)	1680
Halifax Regional Fire (Company 18)	1712
Halifax Regional Fire (Ops #1)	528
Halifax Regional Fire (Ops #2)	560
Halifax Regional Fire (Ops #3)	592
Halifax Regional Fire (Ops #4)	624
Halifax Regional Fire (Ops #5)	656
Halifax Regional Fire (Ops #6)	688

## Police Operations:

Halifax Regional Police (CPIC)	240
Halifax Regional Police (East Primary)	112
Halifax Regional Police (East Secondary)	144
Halifax Regional Police (Escort)	176
Halifax Regional Police (Special Enforcement)	208
Halifax Regional Police (Vice)	304
Halifax Regional Police (Task Force)	272
Halifax Regional Police (West Primary)	48
Halifax Regional Police (West Secondary)	80

## City Departments:

42094  
42806

## Metro Transit:

24832  
24856  
24848

## Military Police:

32480

## More Northern Trunking

A few hundred miles south of Halifax

sits another public safety trunked system – that of Portland, Maine. Ralph Harris provided the following information. There are a lot of holes to fill in; we hope we hear from some "Maniac" readers.

## City of Portland, Maine

## Frequencies:

866.0625, 866.2875, 866.3125, 866.6625,  
866.7875, 867.2875, 867.7875, 868.2875,  
868.5375, 868.7875

## IDs

48	Police
80	Police Channel 2
1648	Fire
1744	Fire Tactical
3248	Electrical Division
4848	Public Works
6280	Parking Division

## Random Scans through the Air

The concern over cell phone usage on the ground at airports has apparently waned. On recent flights, while sitting at the gate I counted 10 people who pulled out their cell phone and began chatting away. No flight attendants intervened.

I took out my scanner and began listening to ground control on 121.900 ("point-niner"), as well as ground crew personnel on those 460.650-460.875 MHz frequencies that are a kick to monitor. I was flying Delta which has a very liberal policy in regard to scanners (that's one reason I will continue to fly them almost exclusively).

Nowadays, when someone sees a scanner they assume it's a cellular phone. That's one nice thing about carrying around a scanner today. Years ago you might have gotten some funny, "what is this guy, a cop?" looks walking around a mall or stadium or airport with a scanner. Today, everyone just assumes it's another phone or electronic organizer of some type.

(Before anyone writes and complains, I did turn my scanner off quickly, more out of a sense of guilt than anything else. The rules still do state that you should only operate them above 10,000 feet. I can't imagine my little scanner causing more havoc with a parked plane's communications system than a transmitting cell phone, but we've been through the technical arguments before.)

If you're about to go on a flight and your airline allows scanners, give it a try. You'll find you suddenly have the best (and highest) scanner antenna and receiver in the world.

# Forestry Conservation

This month's *Service Search* column will be taking an in-depth look at the new Forestry Conservation frequency allocations currently being licensed by the Federal Communications Com-

mission for state and local use. Scanner listeners should be listening for newly allocated splinter channels (VHF 7.5 kHz/UHF 6.25 kHz) to become active in their areas.

### Forestry Conservation Frequency Allocations

30.86	Base or mobile		151.4075	Base or mobile	Bandwidth not to exceed 11.25 kHz
30.90	Base or mobile		151.415	Base or mobile	
30.94	Base or mobile		151.4225	Base or mobile	Bandwidth not to exceed 11.25 kHz
30.98	Base or mobile		151.430	Base or mobile	
31.02	Base or mobile		151.4375	Base or mobile	Bandwidth not to exceed 11.25 kHz
31.06	Base or mobile	State (shared with Industrial/Business Pool)	151.445	Base or mobile	
31.10	Base or mobile	State (shared with Industrial/Business Pool)	151.4525	Base or mobile	Bandwidth not to exceed 11.25 kHz
31.14	Base or mobile	State (shared with Industrial/Business Pool)	151.460	Base or mobile	
31.18	Base or mobile	State	151.4675	Base or mobile	Bandwidth not to exceed 11.25 kHz
31.22	Base or mobile	State	151.475	Base or mobile	
31.26	Base or mobile	State	151.4825	Base or mobile	Bandwidth not to exceed 11.25 kHz
31.30	Base or mobile	State	151.490	Base or mobile	Shared with Industrial/Business Pool
31.34	Base or mobile	State	151.4975	Base or mobile	Shared with Industrial/Business Pool/Bandwidth not to exceed 11.25 kHz
31.38	Base or mobile	State			
31.42	Base or mobile	State	159.225	Base or mobile	
31.46	Base or mobile	State	159.2325	Base or mobile	Bandwidth not to exceed 11.25 kHz
31.50	Base or mobile	State	159.240	Base or mobile	Shared with Industrial/Business Pool in PR/VI
31.54	Base or mobile	State	159.2475	Base or mobile	Shared with Industrial/Business Pool in PR/VI/Bandwidth not to exceed 11.25 kHz
31.58	Base or mobile	State			
31.62	Base or mobile	State	159.255	Base or mobile	Shared with Industrial/Business Pool in PR/VI
31.66	Base or mobile	State	159.2625	Base or mobile	Shared with Industrial/Business Pool in PR/VI/Bandwidth not to exceed 11.25 kHz
31.70	Base or mobile	State			
31.74	Base or mobile	State	159.270	Base or mobile	Shared with Industrial/Business Pool in PR/VI
31.78	Base or mobile	State	159.2775	Base or mobile	Shared with Industrial/Business Pool in PR/VI/Bandwidth not to exceed 11.25 kHz
31.82	Base or mobile	State			
31.86	Base or mobile	State	159.285	Base or mobile	Shared with Industrial/Business Pool in PR/VI
31.90	Base or mobile	State	159.2925	Base or mobile	Shared with Industrial/Business Pool in PR/VI/Bandwidth not to exceed 11.25 kHz
31.94	Base or mobile	State			
31.98	Base or mobile	State	159.300	Base or mobile	Shared with Industrial/Business Pool in PR/VI
44.64	Base or mobile		159.3075	Base or mobile	Shared with Industrial/Business Pool in PR/VI/Bandwidth not to exceed 11.25 kHz
44.68	Base or mobile				
44.72	Base or mobile		159.315	Base or mobile	Shared with Industrial/Business Pool in PR/VI
44.76	Base or mobile		159.3225	Base or mobile	Shared with Industrial/Business Pool in PR/VI/Bandwidth not to exceed 11.25 kHz
44.80	Base or mobile				
44.84	Base or mobile		159.330	Base or mobile	Shared with Industrial/Business Pool in PR/VI
44.88	Base or mobile		159.3375	Base or mobile	Shared with Industrial/Business Pool in PR/VI/Bandwidth not to exceed 11.25 kHz
44.92	Base or mobile				
44.96	Base or mobile		159.345	Base or mobile	Shared with Industrial/Business Pool in PR/VI
45.00	Base or mobile		159.3525	Base or mobile	Shared with Industrial/Business Pool in PR/VI/Bandwidth not to exceed 11.25 kHz
45.04	Base or mobile				
151.145	Base or mobile		159.360	Base or mobile	Shared with Industrial/Business Pool in PR/VI
151.1525	Base or mobile	Bandwidth not to exceed 11.25 kHz	159.3675	Base or mobile	Shared with Industrial/Business Pool in PR/VI/Bandwidth not to exceed 11.25 kHz
151.160	Base or mobile				
151.1675	Base or mobile	Bandwidth not to exceed 11.25 kHz	159.375	Base or mobile	Shared with Industrial/Business Pool in PR/VI
151.175	Base or mobile		159.3825	Base or mobile	Shared with Industrial/Business Pool in PR/VI/Bandwidth not to exceed 11.25 kHz
151.190	Base or mobile	25 kHz bandwidth authorized			
151.205	Base or mobile		159.390	Base or mobile	Shared with Industrial/Business Pool in PR/VI
151.2125	Base or mobile	Bandwidth not to exceed 11.25 kHz	159.3975	Base or mobile	Shared with Industrial/Business Pool in PR/VI/Bandwidth not to exceed 11.25 kHz
151.220	Base or mobile				
151.2275	Base or mobile	Bandwidth not to exceed 11.25 kHz	159.405	Base or mobile	Shared with Industrial/Business Pool in PR/VI
151.235	Base or mobile		159.4125	Base or mobile	Shared with Industrial/Business Pool in PR/VI/Bandwidth not to exceed 11.25 kHz
151.2425	Base or mobile	Bandwidth not to exceed 11.25 kHz			
151.250	Base or mobile		159.420	Base or mobile	Shared with Industrial/Business Pool in PR/VI
151.2575	Base or mobile	Bandwidth not to exceed 11.25 kHz	159.4275	Base or mobile	Shared with Industrial/Business Pool in PR/VI/Bandwidth not to exceed 11.25 kHz
151.265	Base or mobile				
151.2725	Base or mobile	Bandwidth not to exceed 11.25 kHz	159.435	Base or mobile	Shared with Industrial/Business Pool in PR/VI
151.280	Base or mobile		159.4425	Base or mobile	Shared with Industrial/Business Pool in PR/VI/Bandwidth not to exceed 11.25 kHz
151.2875	Base or mobile	Bandwidth not to exceed 11.25 kHz			
151.295	Base or mobile		159.450	Base or mobile	
151.310	Base or mobile	25 kHz bandwidth authorized	159.4575	Base or mobile	Bandwidth not to exceed 11.25 kHz
151.325	Base or mobile		159.465	Base or mobile	
151.3325	Base or mobile	Bandwidth not to exceed 11.25 kHz	159.4725	Base or mobile	Bandwidth not to exceed 11.25 kHz
151.340	Base or mobile		170.425	Base or mobile	State (west of Mississippi River)
151.3475	Base or mobile	Bandwidth not to exceed 11.25 kHz	170.475	Base or mobile	State (east of Mississippi River)
151.355	Base or mobile		170.575	Base or mobile	State (west of Mississippi River)
151.3625	Base or mobile	Bandwidth not to exceed 11.25 kHz	171.425	Base or mobile	State (east of Mississippi River)
151.370	Base or mobile		171.475	Base or mobile	State
151.3775	Base or mobile	Bandwidth not to exceed 11.25 kHz	171.575	Base or mobile	State (east of Mississippi River)
151.385	Base or mobile		172.225	Base or mobile	State (west of Mississippi River)
151.3925	Base or mobile	Bandwidth not to exceed 11.25 kHz	172.275	Base or mobile	State
151.400	Base or mobile		172.375	Base or mobile	State (west of Mississippi River)



# Updated US Coast Guard Weather Schedule

Since this column runs at the height of hurricane season in the northern hemisphere, it seems timely to look at the United States Coast Guard's weather transmissions in the voice mode. These are upper sideband (USB), using a digitally synthesized voice they've named "Perfect Paul." The current Paul has a distinctive delivery that is easily recognized as the Coast Guard.

For 1999, a sixth transmitter has been added in New Orleans, Louisiana. It simulcasts the weather from CAMSLANT Chesapeake – the Communications Area Master Station, Atlantic, in Norfolk, Virginia. Like CAMSLANT, the New Orleans relay alternates the National Weather Service high seas forecasts with their offshore ones.

"CAMSPAC" is a similar master station for the Pacific, located on Point Reyes north of San Francisco, California. Other transmissions relevant to different Pacific areas come from Alaska, Hawaii, and Guam. Since the frequencies have changed slightly, I've included the whole, updated list in Table 1.

### ■ Drug War Leaves Panama

Joint Interagency Task Force, South (JIATF-S), a combined US military and government agency which had conducted South and Central American anti-drug operations since 1997, is no more. As part of the planned closure of Howard Air Force Base in Panama, this mission was transferred to Joint Interagency Task Force, East. JIATF-E, a Caribbean anti-drug agency, operates out of Key West, Florida, and is heard almost daily on HF (high-frequency radio).



Originally, JIATF-S was to become part of an ambitious, multinational operation in Panama. Included would have been not only Howard's airstrip, but the antenna farm on Galeta Island, complete with a treaty stipulation that no high-voltage power lines be strung within two miles.

All this fell through because of international differences regarding permission for US personnel to conduct non-drug-related operations. To fill the resulting huge gap, JIATF-E will create "Forward Operating Locations" at existing airstrips in Aruba, Curacao, and Ecuador. Negotiations are also in progress with Costa Rica.

In addition, Howard's busy search-and-rescue (SAR) operations have moved to the US Navy base in Key West. This involved the creation of some new capabilities at this base, with its large communication station. It will be interesting to see just how these changes affect what we hear on the radio.

### ■ Web Utility Resources

As I always say, this is not a computer column, but those who do such things should check out the Utility World web page at [www.primenet.com/~rhwatts/uteworld/uteworld.html](http://www.primenet.com/~rhwatts/uteworld/uteworld.html). (Sorry about the long address, but that's how it has to be, for now.) As with all these, add the usual <http://> doodad to the beginning. It has some huge lists that would never fit in these pages and occasional news too

immediate for our lead time.

Of course, there are a number of Internet discussion forums for utility listeners to exchange information in real time. Tom Sevart, who writes a column similar to this one for the Association of Clandestine Enthusiasts (ACE), has just started one for "numbers" at [www.delphi.com/spynumbers](http://www.delphi.com/spynumbers). It's new, but it looks promising.

### ■ Bogus Numbers Broadcasts

It had to happen. As if the real "numbers" stations – those absolutely opaque broadcasts presumably aimed at spies – were not weird enough, now people have started faking them.

For some time, we've had the "menu" stations. They usually pop up on "pirate" radio frequencies just below 7 megahertz (MHz), but elsewhere as well. The oldest one is a pretty good imitation of the Spanish female "Atención" (Attention!) voice from Cuba. However, the machine-spliced numbers (cinco, cuatro, whatever) are replaced by the names of Mexican food items (taco, burrito, tamale...). More recently, we got an imitation of the imitation, in the CIA "counting" format, but with its English numbers replaced by delectable Chinese items and wines along with our Mexican favorites.

As if this were not dizzy enough, the latest shortwave utility fans are – believe it or not – underground dance club DJs and musicians! They consider any recorded, sampled, or synthesized sound to be fair game for their creative mixes, so it was probably only a matter of time. Now "numbers," plus all those space-ship noises HF does so well, are turning up in underground records and even back on HF as pirate radio. Recently, sampled "numbers" and synthesizer dance grooves have been heard on 6290 kilohertz (kHz). What next; participatory utility listening? It's getting strange out there, folks.

**Table 1: US Coast Guard 1999 Weather Schedule**

<u>Time of broadcast (UTC)</u>	<u>Frequencies</u>	<u>kHz (USB)</u>	
<b>CAMSLANT Chesapeake, VA (NMN)</b>			
0330, 0500, 0930	4426	6501	8764
1130, 1600, 2200, 2330	6501	8764	13089
1730	8764	13089	17314
<b>New Orleans, LA (NMG, relays NMN)</b>			
0330, 0500, 0930, 1130	4316	8502	12788
1600, 1730, 2200, 2330	4316	8502	12788
<b>CAMSPAC Pt. Reyes, CA (NMC)</b>			
0430, 1030		4426	8764 13089
1630, 2230		8764	13089 17314
<b>COMMSTA Kodiak, AK (NOJ)</b>			
0203, 1645		6501	
<b>COMMSTA Honolulu, HI (NMO)</b>			
0600, 1200		6501	8764
0005, 1800		8764	13089
<b>COMMSTA Guam (NRV)</b>			
0930, 1530		6501	
0330, 2130		13089	

## Abbreviations used in this column

AFB	Air Force Base	FEMA	Federal Emergency Management Agency
AM	Amplitude Modulation	HQ	Headquarters
AMC	Air Mobility Command (USAF)	ID	Station identification
AMTOR	Amateur Teleprinting Over Radio	MARS	Military Affiliate Radio System
ARQ	Automatic Repeat Request teleprinter system	MFA	Ministry of Foreign Affairs
AWACS	Airborne Warning And Control System	NATO	North Atlantic Treaty Organization
CAMSLANT	Coast Guard Area Master Station, Atlantic	POW	Prisoner Of War
CG	Coast Guard	Pol-ARQ	Polish ARQ teleprinting system
CQ	General call to all stations	R3E	Reduced carrier, single-sideband emission
CW	Morse code telegraphy ("Continuous Wave")	RSA	Republic of South Africa
DSC	Digital Selective Calling	RTTY	Radio Teletype
EAM	Emergency Action Message	SAM	Special Air Mission
FEC	Forward Error Correction teleprinter system	UK	United Kingdom
FEC-A	European FEC teleprinter system	Unid	Unidentified
		US	United States
		USA	United States of America
		USAF	United States Air Force
		VFT	Voice Frequency Telegraph printing system
		VIP	Very Important Person

All transmissions are USB (upper sideband) unless otherwise indicated. All frequencies are in kHz (kilohertz) and all times are UTC (Coordinated Universal Time).

- 2658.0 Unid autolinking burst, probably FEMA, at 0253. (Paul Bunyan-MO)
- 3202.0 "A-9-A"-Possible NATO trigraph in Allied Force, telling the net that Jesse Jackson has freed the POWs, and that the downed F-16 pilot is rescued, rogered by "A-9-B," at 0640. (Bunyan-MO)
- 4027.0 Cuban "Atencion" numbers station, with 5-figure code groups in AM, parallel on 7580, at 1005. (Camillo Castillo-Panama)
- 4350.0 TBB5-Turkish Navy, Ankara, calling TBDJ in CW, at 2052. (Ary Boender-Holland)
- 4739.0 Charlie 763-Probably a US Navy P-3, working Golden Hawk (Brunswick Naval Air Station), for "Spare Group" report, at 0402. (Ron Perron-MD)
- 4780.0 Common anti-submarine warfare voice coordination freq - Larry WGY 908-FEMA Region 8 and alternate control station, Denver, CO, working WGY 938 (Cheyenne, WY) on "F-10," at 1519. (Bunyan-MO)
- 5170.0 KPA 2-Mossad, Israel, repeating identifier in AM, at 0418. (Dean Burgess-MA)
- 5180.0 Unid-Cherta "numbers" station, at 2103. (Boender-Holland)
- 5221.5 TYE-Cotonou Air, Benin, with weather and traffic in multichannel ARQ, at 1900. (Day Watson-UK)
- 5300.0 The Counting Station-English language numbers in 3/2 groups, probably US CIA, in R3E, suddenly moved to 5301 and restarted, at 0421. (Burgess-MA)
- 5327.5 WUI 2-US Army Corps of Engineers, Little Rock, AR, working WUG, Vicksburg, MS, on "Channel 3," at 1527. (Bunyan-MO)
- 5400.0 WUJ 14-US Army Corps of Engineers (unknown), in a Y2k drill with WUJ1, headquarters station in Omaha, NE, at 1301. (Bunyan-MO)
- 5696.0 CAMSLANT Chesapeake-US Coast Guard, with patches from Rescue 1718 regarding rescue with Coast Guard 6007, also used 5692 for an extended patch, at 0434. (Burgess-MA) CAMSLANT, in search and rescue with Coast Guard 1718, CG 6012, CG 6031, CG 6032, and CG Rescue 6033, at 1635. (Anthony Agnelli-NY)
- 5961.0 Unid autolinking burst, probably FEMA, at 1545. (Bunyan-MO)
- 6020.0 WUG-US Army Corps of Engineers, Vicksburg, MS, working WUG 647 (unknown) on "Channel 6," at 1611. (Bunyan-MO)
- 6312.0 Ship sending testing DSC ID of 232826000 with Lyngby Radio, at 1437. (Watson-UK)
- 6357.0 SAA-Karlskrona Radio, Sweden, calling CQ in CW at 2041. (Boender-Holland)
- 6362.0 MGJ-Royal Navy, Faslane, UK, with VFT bulletins at 1022. (Boender-Holland)
- 6379.0 4XZ-Israeli Navy, Haifa, with CW marker at 1645. (Watson-UK)
- 6380.2 4XZ-Israeli Navy, with CW marker at 0109. (Castillo-Panama)
- 6399.8 UON-Baku Radio, Azerbaijan, sending CW marker with bad signal and keying, then weather (?) in Russian, at 1800. (Watson-UK)
- 6415.1 7TF-Boufarik Radio, Algeria, CW marker at 0130. (Castillo-Panama)
- 6465.0 UIW-Kaliningrad Radio, Russia, with CW navigation warnings at 2033. (Boender-Holland)

- 6469.0 SXA24-Greek Navy, Greece, CW marker at 0252, again at 0300. Also on 6471 at 0229. (Castillo-Panama)
- 6502.0 TBDJ-Turkish Navy, with CW marker, then "QAP" ("Listen for me"), at 0300. (Castillo-Panama)
- 6516.0 CM69-Unknown fishing boat on international marine channel, mentioned that US Navy had shoed him away from an exercise, at 2255. (Burgess-MA)
- 6586.0 New York-NY Radio, NY, working Air Jamaica 001 on Caribbean route channel, at 0510. (Perron-MD)
- 6723.0 "9-H-4"-Possible US Navy, checking in with Sealord at 0003. (Perron-MD)
- 6757.0 MKL-Royal Air Force, Kinloss, UK, with encrypted messages for "6-P-T" at 0207, 0210, and 0309. (Castillo-Panama)
- 6766.0 NGB24-Army National Guard, Springfield, IL, calling NGB26 (Iowa NG, Johnston, IA) and others, at 0611. (Bunyan-MO)
- 6781.0 Unid CW "numbers," in progress at 0208. (Castillo-Panama) *Most likely Russian -Hugh*
- 6796.0 Cuban CW "cut" numbers station, also uses 6797, daily at 1200. Also certain days at 1300. (Castillo-Panama)
- 6826.0 Unid-Cuban "cut" numbers station, also uses 6824, daily at 1300. Also certain days at 1000 and 1200. (Castillo-Panama)
- 6867.0 Unid-Russian "numbers" in CW, at 0100. Went to 6866 at 0130, switching to rare live male USB voice in Russian-accented English. Back to 6867 at 0153 for tests and message with normal computer voice at 0200. Data bursts heard on same carrier at 0220. (John Maky-AR)
- 6945.0 Unid-Cuban "cut" numbers station, with 5-letter CW groups, daily at 1200. (Castillo-Panama) *Note how often Cuban and Russian numbers show up on the same frequencies. -Hugh*
- 6970.0 The Czech Lady-Unidentified "numbers" at 1250. (Boender-Holland)
- 6970.0 The Counting Station-English R3E numbers, probably US CIA, at 2043, repeated message at 2046. (Burgess-MA)
- 7572.0 FDC-French Air Force, Metz, France, CW marker at 0252. (Castillo-Panama)

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- 7583.0 Cuban "Atencion" numbers station, different voice than usual, in AM at 1033. (Castillo-Panama)
- 7873.0 SAM 40787-US Air Force, with SAM 50125, both E-4Bs taking US Secretary of Defense and Congressmen to Italy for Allied Force, on "F-741," at 0240. Also used 6730 kHz (F-267) with Andrews AFB. (Bunyan-MO)
- 7925.5 SAM 60202-US Air Force, radio check with Andrews VIP on "F-395," at 0523. (Bunyan-MO)
- 8000.0 Unid, muffled, AM, female voice and time beeps, possibly JJY in Japan, at 1030. (Steimel-AR)
- 8186.0 Cuban "Atencion" station, AM numbers in progress, at 1106. (Castillo-Panama)
- 8521.9 CBV-Playa Ancha Radio, Chile, CW marker at 0117. (Castillo-Panama)
- 8574.1 LGW-Rogaland Radio, Norway, also mentioned LGQ on 500 kHz, holding no traffic (QRU) at 0120. (Castillo-Panama)
- 8725.0 Seoul Radio-Seoul, Korea, maritime coastal station with "Ode To Joy" music at 1123. (Steimel-AR)
- 8985.0 Unid alphanumerics in CW, then RTTY, at 0311. (Castillo-Panama) *Sounds Russian, and in the aero band! -Hugh*
- 8992.0 Navy PL471-Probably a US Navy P-3, with patch via Croughton Global, UK, to Brunswick Naval Air Station for weather, at 0230. (Perron-MD)
- 9016.0 Shado 404-US Air Force E-6, attempting patches into Oklahoma City tornado area via McClellan Global on this discrete frequency, at 0250. (Bunyan-MO) *This is the same aircraft logged by Jeff Haverlah last month. -Hugh (US Navy E-6A attached to VQ-4 based at Tinker AFB - Larry)*
- 9024.0 St. Petersburg Air, Russia, working unid aircraft at 1026. (Boender-Holland)
- 9230.0 Cuban "Atencion," ending its regularly scheduled AM "numbers," but then abnormally starting up again, Monday at 1049. (Steimel-AR)
- 10100.8 DDK-Hamburg Meteorological, with RTTY weather at 1015. (Boender-Holland)
- 10445.0 Cuban "Atencion," female Spanish voice with "numbers" in AM, at 0300. (Jay Steimel-AR) Cuban Atencion numbers, very wide AM signal, at 0306. (Doug Starwalt-USA)
- 10665.0 "Counting Station," probably US CIA, female Spanish voice with count and "numbers," in R3E at 0300. (Steimel-AR)
- 10774.0 The English Man-Russian intelligence "numbers" in AM, at 2010. (Boender-Holland)
- 10822.0 4XML-Unknown station, first hit in a long time, with CW marker probably from Chinese mainland, at 0730. Also on 8303 at 1100. (Takashi Yamaguchi-Japan)
- 10952.0 HBD20-Swiss MFA, Berne, with encrypted ARQ messages to embassies, at 1010. (Boender-Holland)
- 11139.0 RDL-Russian (CIS) Navy, Smolensk or Moscow, with frequency-shifted Morse, then encrypted RTTY. (Day Watson-UK)
- 11175.0 Unid Japanese Navy aircraft, with callup and patch through US Global, at 0230. (Pete Wiggins-UK) Waverider 06-US military Pacific exercises, working Waverider 04, 05, and 08, plus Neptune 08 and War Dragon. Also using frequency "Charlie Alpha," 6693 kHz, also known as "66 Alpha." Later went to "Charlie Zulu," not found. All this started at 0400. (Philip Humes-CA) Reach 410-US Air Force Air Mobility Command, patch to Aviano Metro, Italy, for weather, at 2344. (Steimel-AR)
- 11181.0 SAM 56973-US Air Force One backup aircraft, in patch to SAM 29000 via Andrews Global, using a discrete channel, mentioned an unknown "normal company HF frequency," at 1538. (Bunyan-MO)
- 11181.0 PACAF 01-Flight carrying commander of US Pacific Air Force, getting weather from Hickam at 0408. Icebox 31-US Air Force, making a health and welfare inquiry patch to Hickam at 0423. (Haverlah-TX)
- 11209.0 Unid "Whale Sound Station," with haunting audio sweeps a bit like whale songs, usually caused by malfunctioning US military landline conditioners, at 0430. (John Maky-AR)
- 11214.0 Dragnet Whisky-US Air Force E-3B AWACS, Tinker AFB, in patch via Trenton Military to 552ACW/966AACJS Okie Sam (AWACS control, Tinker), regarding format training, at 1330. (Perron-MD)
- 11247.0 Ascot 5575-Probable US military flight with Ascot 5571, both C-130s, working Architect (Royal Air Force) enroute to Cyprus. (Perron-MD)
- 11253.0 Unid female AM "numbers" voice, format sounded like New Star but too weak to copy, at 2000, 2200, and 2230. (Steimel-AR)
- 11430.0 New Star Broadcasting-Taiwanese Intelligence, Taiwan, with standard half-hour cycles in AM daily. Also noted that the "Second Service" uses 15388 AM, interfering with Chinese mainland broadcaster on 15390. (Richard Lam-Singapore)
- 11580.0 The Counting Station-English language numbers, probably US CIA, in R3E, at 2100. (Yamaguchi-Japan)
- 11801.0 WGY 906-FEMA Region 6, in Automatic Link Establishment with WGY 965, Austin, TX, at 1900. (Bunyan-MO)
- 12186.0 The English Man-Russian intelligence "numbers" in AM, at 2000. (Boender-Holland)
- 13022.0 SPB-Szczecin Radio, Poland, with ARQ sync markers and ID in frequency-shifted Morse, also traffic heard at 0140. (Starwalt-USA)
- 13105.0 WLO-Mobile Radio, AL, with Caribbean weather at 1815. (Castillo-Panama)
- 13514.0 WAR-US Army MARS HQ, Washington, DC, with annual RTTY Armed Forces Day message from Secretary of Defense, at 2332. (Bunyan-MO)
- 13580.3 HMF36-Korean Central News Agency, Pyongyang, N. Korea, RTTY test and frequency list, at 1228. (Bob Hall-RSA)
- 13722.0 B1-Unid military, calling B24, also autolinking bursts at 1547. (Bunyan-MO) *This is a Director of Military Support (DOMS) assigned frequency and National Guard - Larry*
- 13921.0 MIW2-Mossad, Israel, with numbers in AM, and the CW marker of 4XZ, Israeli Navy, audibly mixing into the carrier. Also using 10970, all at 0315. (Maky-AR) *Yes, this and other such mixes seem to indicate Israeli military sites as one origin for Mossad "numbers." -Hugh*
- 13927.0 Sooner 80-Oklahoma Civil Air Patrol, phone patch at 1949. (Steimel-AR)
- 14160.0 RPFNG-Portuguese Navy, Alges, Portugal, with RTTY message to RPFNN, Lisboa, at 1314. (Boender-Holland)
- 14450.0 WGY 912-FEMA Information Technology Service Center, Winchester, VA, working WGY 918-Denver, CO, on "F-41," at 1857. (Bunyan-MO)
- 14465.0 NPL-US Navy MARS, with AMTOR Armed Forces Day message at 0040. (Bunyan-MO)
- 14467.0 Lincolnshire Poacher-British MI6/SIS, Cyprus, with "numbers," parallel on 10426 and 12603, at 1400. (Yamaguchi-Japan)
- 14487.0 Lincolnshire Poacher-British MI6/SIS, Cyprus, with "numbers," parallel on 15682 kHz, at 1200. Same station, next day, at 1700. (Boender-Holland)
- 14577.0 The Counting Station-CIA "numbers," in R3E, also on 16198, at 1200. (Yamaguchi-Japan)
- 14720.0 Russian FAPSI (government comm intelligence agency), with tones and unreadable RTTY, at 1454. (Boender-Holland)
- 14830.0 Cuban "Atencion," AM numbers at 2121. (Steimel-AR)
- 15016.0 Reach 813-US Air Force, with patches to Cherry Point and Hilda East AMC headquarters, Scott AFB, IL, at 2113. (Steimel-AR)
- 15020.0 Unid-possibly US military, several stations broadcasting what sounded like an EAM, at 2125. (Castillo-Panama)
- 15650.0 CIA "Counting Station," R3E "numbers" at 2300. (Steimel-AR)
- 15682.0 Lincolnshire Poacher-Same British "numbers" as 14487, at 1200. (Boender-Holland)
- 16248.0 Polish Embassy, Nairobi, Kenya, with Pol-ARQ chatter at 1530. (Hall-RSA)
- 16326.0 WUJ-US Army Corps of Engineers, Portland, OR, working WUO, Washington, DC, on "Channel 13," at 1601. (Bunyan-MO)
- 17050.0 4XZ-Israeli Navy, Haifa, CW marker at 0250. (Castillo-Panama)
- 17180.0 FUG-French Navy, La Regine, testing in RTTY at 1040. (Boender-Holland)
- 17499.0 Cherry Ripe-British MI6/SIS, probably Guam, with "numbers," also noted on 22108, at 0000. (Yamaguchi-Japan)
- 18006.0 Eight Amp-Possible callsign of US military working Sandusky on "Zulu-260," first confirmation for this frequency, at 2056. (Haverlah-TX)
- 18036.0 CIA Counting Station with "numbers" in R3E, also on 16198, at 0000. (Yamaguchi-Japan)
- 18064.0 Polish MFA, Warsaw, with messages in Pol-ARQ to Nairobi and Dar-es-Salaam embassies in Africa, at 1535. Warsaw MFA with coded Pol-ARQ message for Damascus at 1633. News broadcast, different day at 1652. (Hall-RSA)
- 18416.4 8BY-French Intelligence, usual CW markers at 1454. (Hall-RSA)
- 19036.5 Ambalg Accra-Algerian Embassy, Ghana, with Super-Flash precedence message in French to Algiers regarding state visit of Ghana president, at 1519. (Hall-RSA)
- 19665.0 Sting Bee-US military, working Eye Goggle on "Zulu-290," at 1818. (Bunyan-MO)
- 19884.0 Cherry Ripe-British MI6/SIS, probably Guam, with "numbers," parallel 21844, at 0100. (Yamaguchi-Japan)
- 20946.0 8BY-French Intelligence, France, with CW marker and code groups, parallel 14931 and 18415, at 1240. (Yamaguchi-Japan)
- 22108.0 Cherry Ripe-British MI6/SIS, "numbers," parallel 17499, at 0000. (Yamaguchi-Japan)
- 23461.0 Cherry Ripe-British MI6/SIS, "numbers," parallel 17499, at 1100. (Yamaguchi-Japan)
- 24370.0 P6Z-French MFA, Paris, calling Y9L, Pretoria, in Fec-A at 1311. (Hall-RSA)





### Piccolo

**T**he unmistakable warbling, musical cadence that gives the system its name, makes Piccolo one of the most well recognized of the complex digital signals. Designed by diplomatic communications engineers at what is now the British Foreign and Commonwealth Office (FCO) in the late 50s, the Piccolo Mark Six system exists in two forms, based on sending two audio tones in sequence from a selection of either six (for the ITA-2/Baudot alphabet) or 12 (for the ITA-5/ASCII alphabet). Most monitors refer to the systems as 6-tone and 12-tone Piccolo, or simply Piccolo-6 and Piccolo-12.

Both systems key at 20 baud but a newer "Mark 10" version of the 6-tone system has been heard keying at 40 bd. Other experimental versions with, for example, a missing tone have also been heard.

#### ■ Who Pipes Piccolo?

Former users of the Piccolo 6-tone system include the Australian Forces, but most activity these days comes from Britain's Royal Navy, Army and Air Force, where both regular and reserve (Territorial Army) forces can often be heard using 2, 3 or even 4-channel units.

The 12-tone single channel system is rarely heard, always strongly encrypted, and is often used by the FCO as backup to more modern satellite links. The 6-tone system was also rumored to have been used by Chilean and Peruvian Forces at one time.

Here are some recently heard Piccolo frequencies:

#### **MKD, RAF Akrotiri, Cyprus**

10317.51 10927.51 11031.51 12170.51  
 13368.51 13505.51 14550.51 14643.51  
 18812.51 18981.51 19058.51

#### **MTS, RAF Port Stanley, Falkland Islands**

13998.01 14593.51 15857.51 16205.51  
 18422.01

#### **MKK, RAF London, UK**

10261.51 13580.51 14510.51 14708.51  
 14765.51 14970.51 15883.51 18057.51  
 19004.01 20265.51 20292.51

#### **GYU, Royal Navy, Gibraltar**

10428.51 10446.51 10615.51 10852.51  
 11115.51 12305.51 12322.51 13364.51  
 13348.51 13447.51 13525.51 14620.51  
 14950.51 15763.51 15797.51 18510.51

#### **GXQ, Army, London, UK**

9305.51 10370.51 10845.51 13502.51  
 14544.51 16120.51

You can see that regular ITU-conforming callsigns in the Mxx and Gxx series are used. However, transition of the Piccolo equipment from regular to reserve and exercising units often means that a unit using the callsign MKD is not actually located in Cyprus. MUH is another such callsign often seen, but no longer used by the former regular unit in Nanyuki, Kenya, to whom the callsign was originally allocated.

The operator's chit-chat is the often the clue to authentication. Frequencies are communicated amongst stations by tactical codes such as "F1234." Those using two digits are believed to be genuinely located in the allocated place, whereas those with four digits are not.

#### ■ Decoding Piccolo

Both 6- and 12-tone variants of Piccolo are supported by Hoka, Wavecomm and Universal M8000 decoders. Because of the narrow tone spacing (20 Hz), precise tuning, frequency accuracy and a narrow filter are preferable for decoding Piccolo correctly. Most usually, a 6-tone Piccolo unit supports two channels, with the operator's (engineer's) channel centered on a .51 kHz offset, and the "traffic" channel 400Hz above this point, i.e., at .91 kHz offset. Three and 4-channel units will have additional traffic channels at 1.31 kHz and 1.71 kHz offsets.

Traffic channels are nearly always encrypted, so these tend to be of little interest. The action is on the engineer's channel. Tuning the signal is simple if the engineer's channel is idle (which it often is for long periods). If your receiver has high frequency accuracy, simply tune to the idling engineer's channel and wait for the chatter.

If not, tune in the signal roughly, and then use the decoder's tuning display (on Hoka decoders press the "G" key after selecting the Piccolo module) and position the two idling tones centrally about the decoder's center frequency. Then wait, and in within a few minutes you should see some exchanges between the two units.

Here is an extract of typical engineer's chatter that you might see...

mkk de mkd pse qsy f2398 f2398 f2398  
 1010z kkilo  
 mkk de mkd pse resync we have lots of middle  
 eastern qrm here 1015z kkilo  
 mkk de mkd rgr pal we see you now 1018z  
 kkilo  
 mkk de mkd chan 2 ok now pse send foxes on  
 chan 3 kkilo

You can find audio clips of Piccolo-6 and Piccolo-12 at the excellent Digital Modes website by pointing your browser to the following links. Good decoding and have fun with Piccolo!

<http://rover.wiesbaden.netsurf.de/~signals/WAV/PICC-MKVI.HTML>

<http://rover.wiesbaden.netsurf.de/~signals/WAV/PICC-MK12-TFC.WAV>

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# Thanks to Cuba and China, Jamming Continues

The communist dentro-cubanos have attacked another Miami station with heavy bubble jamming: Voz Cristiana, transmitted from Chile on 21500, has noted jamming before and after 1700 intermittently from mid-June to mid-July, burying VC underneath. No trace of jamming is found on VC's parallel 21550 which is aimed at Mexico and is always stronger here.

Actually, though I find their programming of no interest whatsoever, I'd be surprised if VC has any political content of concern to the dentro-cubanos. I suspect this is another instance of running jammers far beyond the necessary hours on a given frequency, i.e. 2100-2200 with R. Martí, Delano, on 21500, as previously reported. In my view, the Cuban government brings not only shame upon themselves for being so lacking in self-confidence that they feel jamming is necessary – but also derision for being so incompetent in carrying it out (gh, *World Of Radio*)

China is operating a sophisticated network of electronic espionage in Cuba, aimed at the United States and taking advantage of the Castro regime's "electronic war against yankee imperialism"; this according to intelligence sources and documents from government agencies to which *El Nuevo Herald* has had access.

The Chinese bases of electronic espionage have been camouflaged

under the pretext of a collaboration between China and Cuba in the fields of electronics and radio communications, on which both signed accords during the February visit of Chinese Defense Minister Chi Haotian to Havana.

The principle bases of Chinese eavesdropping and tracking in Cuba are located northeast of Santiago de Cuba at the easternmost part of the country and in the zone of Bejucal in the province of Havana, according to intelligence sources. The encampment of antennas in Santiago de Cuba are primarily dedicated to the tracking of US military satellites, while in Bejucal the Chinese have mounted a complex system of intercepting telephone communications.

To cover these activities the official Chinese government radio station, China Radio International, is transmitting from Havana its shortwave programs toward the US and Latin America.

"The transmissions of China Radio International are now originating from Havana on 9570.0 kHz," asserted an internal report from the FCC, which located China Radio International's transmitter at 22.56 North and at 82.23 West, near the town of Bejucal, southeast of the city of Havana. (Pablo Alfonso, *El Nuevo Herald* via A. F. Mastrapa, *Clandestine Radio Watch* and Ivan Grishin)

**ARGENTINA** Every Tuesday through yearend, Tue at 2300-0100 UT Wed, RAE is simulcasting on 15345, 11710 and 9690, an LRA1/Folklorica FM series of live recitals of music by different Argentine singers, *Ciclo de Recitales en Vivo* (Gabriel Iván Barrera, Argentina via Volker Willschrey)

R. Fósil, follow-up to last month: subsequently using only FM 88.1 and AM 1610; soon planned a new 50 watt transmitter on 6990 AM with half-wave dipole aimed northeast. Further plans for 50 watts AM on 9990 and even higher frequencies (Ing. Alfredo José Angeletti, director of R. Fósil via Nicolas Eramo, *Conexión Digital*)

**BOLIVIA** R. Emisora Ballivián, San Borja, 4788 at 2345-0100\* with *El mensajero tropical* (Kenneth Olofsson, Sweden, *SW Bulletin* via Henrik Klemetz)

Letter from R. Mosoj Chaski, 3310, gives this ID in Quechua: *Ghochapampa llajtamtapacha tukuyin Bolivia suyupi QHESHWASPAJ*. [sic] (Stanger, Brazil, *radioescutas*)

**BOUGAINVILLE** Radio Independence Bougainville, 3850, clandestine, had been off, but was noted in Sydney again, "0930-1050", off early from usual 1100\*. Still 6 watts and the only shortwave station operating from the island (Sam Voron, NSW, *Cumbre DX*)

**BRAZIL** 2460, R. Alvorada, Rio Branco AC, 0900-1400 and 2200-0300; 2470, R. Cacique, Sorocaba SP, inactive; 4935, R. Voz do Coração Imaculado (Ex R. Carajás), 24 hours; 4956.2v, R. Cultura, Campos RJ, relaying Radio Record, Campos RJ 0300-0700 and 1200-1400, with cults of the Igreja Universal do Reino de Deus. (Márcio R. F. Bertoldi, DX Clube Paulista)

2440, R. São Carlos, São Paulo is temporarily off the air; 2490, R. 8 de Setembro, Descalvado, SP is active 0900-2300; 3235, R. Clube Marília, São Paulo and 3255, R. Educadora Cariri, Crato, Ceará are definitely off the air; 4765, R. Rural Santarém, PA 0700-0000; 4935, R. Capixaba, Vitória, ES is 24h (Ferreira Bertoldi, DXCP via *Play DX* via Horacio Nigro, Uruguay)

**CANADA** The RCI site in Sackville, NB, is someplace every radio nut should visit someday. Upon our arrival, we were greeted by a friendly employee who promptly fetched an engineer, who gave us an extensive tour of every nook and cranny of the building. It's a wonderfully well-maintained site, and we're relieved to hear that funding for RCI seems to have stabilized of late. They really do enjoy having visitors, and asked us to encourage all of you to go visit, so: go visit. You won't be sorry. (Scott Fybush, *Northeast Radio Watch*)

via Chet Copeland)

You'll never believe what I'm hearing on 6975 – BBC WS, 2300 UT Sun June 20. Sackville relay missing from 6175, so must be a punch-up error onto RFPI's frequency, which they weren't yet using. Called the Sackville plant number, 1-506-536-2690 (or 2691) and talked to tech on duty John Rose, who said there was an "interface error in the transmitter control system" (Joe Hanlon, PA) I was monitoring and BBC 6975 went off at 2313; 6175 did not immediately come up but it was on at recheck 2322. Frequency or feed mixups are all too common at Sackville, so keep the above number handy and do everyone a favor by advising them if you encounter something like this (gh, *World Of Radio*)

**COLOMBIA** The 5975 station in Villavicencio calls itself both R. Auténtica and R. Macarena, noted at 1130 and 2150.

FARC clandestines: 6170v Voz de la Resistencia - Bloque Oriental, \*1130-1230\* and \*2130-2230\*, both with news the first 40 minutes, then revolutionary music; 6240 Voz de la Resistencia - Comando Occidente, \*2015-2100\* is still here (Yimber Gaviria, Cali, *Mundo Radial*)

**COSTA RICA** TIFC was fair with deep fades on 9644.7 at 1659 amid English programming with ID as "TIFC, international missionary radio, illuminating the pathway of your life" (gh)

Electricity has been installed to the top of the mountain to the south of RFPI, which blocks its antennas toward the south. RFPI expects to have transmitters up there in 6-8 months allowing better reception to the south (RFPI *Mailbag*)

*Continent Of Media*, gh's monthlyish show broadcast on RFPI only: Tue 2000, Wed 0400, 1200, 1730, Thu 0930, Fri 1900, Sat 0300, 1100, 1730, Sun 0130, 0930. Previous editions archived at <http://www.rfpi.org/webcast.html> and current edition at <http://www.DXing.com> (gh)

**CUBA** Due to interference from Iran on 13720, RHC to Europe including English 2030-2130 moved AM to 13750, and USB from 13750 to 13660 (Arnie Coro, RHC *DXers Unlimited*)

**ERITREA** [non] Voice of Democratic Eritrea, Voice of Truth, Voice of the Eritrean Islamic Jihad Movement have moved from 9230 to 8020 – V. of Democratic Eritrea \*1428-1458; V. of Truth \*1500-1530 (Mahendra Vaghjee, Mauritius, *World Of Radio*)

**FINLAND** Juhani Niinisto, head of international radio at YLE Radio Finland, tells me they will add at least two new languages rarely heard on short-

*All times UTC; All frequencies kHz; \* before hr = sign on, \* after hr = sign off; // = parallel programming; + = continuing but not monitored; 2 x freq = 2nd harmonic; A-99=summer season, Mar-Oct; [non] = Broadcast to or for the listed country, but not necessarily originating there.*

wave, Mari and Udmurt. The programs will be heard on weekends starting this autumn, produced in cooperation with a Finnish organization concerned with Finno-Ugric language minorities in the former Soviet Union; on shortwave and satellite (Kim Elliott, VOA *Communications World* via John Norfolk)

**GERMANY** Bayerischer Rundfunk has upgraded its shortwave service on 6085 under the headline "Neue Kurzwelle" (new shortwave). The "MDR info" all-news program of Mitteldeutscher Rundfunk (MDR) from Leipzig will air as an overnight service on 6085 between 2200 and 0400. It will be a completely new experience for MDR to receive reception reports from overseas. For e-mail, address it directly to their technical department: [techhot@mdr.de](mailto:techhot@mdr.de) It's a 500-kW Telefunken, which can operate no lower than 125 kW (Kai Ludwig, Germany)

DW's future is threatened by budget cuts: reduced this year by 29 megamarks to 606; successive cuts next year by 25 MDM, so that by 2003 it will have only 546, a total reduction over 5 years of 89. Director Dieter Weirich foresees that 350 to 400 staff will have to be let go, and several language services dropped (Neusa Soliz via Santa Rita DX Club via [radioescutas](mailto:radioescutas))

**GHANA** An archived recording of the 2000 GMT news in English (carried on GBC Radios 1 and 2) is available at: <http://www.ghanaclassifieds.com/> and <http://www.ghananet-tv.com/> contains archived video of the evening news bulletin (BBC Monitoring)

**GUATEMALA** R. Nacional, 6180, regularly heard in El Salvador around 2200-2300\* for one hour only with *Chapinlandia* – marimba music, tourist info, news; fair signal.

Costa Rican and El Salvadoran newspapers carried a public notice of Superintendencia de Telecomunicaciones, Guatemala, for comments and/or objections for future use of specific radio channels by Guatemala including 5865 for national coverage. So a new station could appear there (Tetsuya Hirahara)

**HONDURAS** La Voz de la Mosquitia, 4910v: look for this one in local evening. Global Outreach repaired the transmitter about a year ago, but took it off of the air after the locals started airing non-Christian programming over the station. A missionary couple has just arrived in country and will be running the station with Christian programs, provided that the transmitter is still working. All this per Larry Hooker of Global Outreach (Hans Johnson, (c) *Cumbre DX*)

R. Litoral, La Ceiba, 4830, announces sked: 1100-1900 Spanish, 1900-2000 English, 2000-2200 Garifono, 2200-2400 Miskito. Usually around \*1115 to 0015\*. At closing they give live announcement in Miskito and Spanish, then canned ID and closing in Spanish and music until sign off around 0015. Their postal QTH is Apartado Postal 888 (not 878 as reported earlier). (Tetsuya Hirahara, El Salvador)

**IRELAND** [non] RTE's daily news bulletin has been extended to Central America on 6155 at 0130. Frequency for Africa has been changed to 21630 at 1830 [has been Ascension] (J. Hayde, RTE) Ms. Hayde tells me the site for 6155 is Merlin at Ramphisham, England (Finbarr O'Driscoll, *Review Of International Broadcasting*)

**ISLE OF MAN** Isle of Man International Broadcasting Co., Ltd., is building a longwave station on 279 kHz; website <http://www.longwaveradio.com> shows a projected coverage map, but also says: *Satellite and Short Wave* - Reception will also be possible over most of Europe by satellite and at certain times of day further afield into the Middle East and former Soviet Union on short wave. We also propose broadcasting to North America on short wave. The radio station's transmissions will be available on the Internet (IOMIBC via gh) No doubt SW not from Man itself, but via Merlin, DTK, etc.

**ISRAEL** English at 0400 on new 15650 is good here, but co-channel Greece is underneath (Joe Hanlon, PA) Next day Israel changed to 15655 (Doni Rosenzweig)

**KENYA** KBC Nairobi, sometimes on 4915, other times on 4885, in Swahili news at 1800 (Antonello Napolitano, Italy, *Cumbre DX*)

**KIRIBATI** R. Kiribati, 9810, is back on. After several months in which the station was off the air awaiting spares, the audience on Christmas Island started complaining. The PTT pressed the remaining 1 kW transmitter into service for R. Kiribati at 0530-0930. R. Kiribati has since gotten its spares for the other transmitter; will only operate 0530-0930 if on the back up. If their regular transmitter is available, they will be on at 1830-2130 and 0000-0130. A log periodic antenna continues to beam the signal to Christmas Island, but listeners there need a sensitive set to pick it up. Many thanks to Bill Reiher of Radio Kiribati and Mr. Enota of Kiribati PTT (Hans Johnson (c) *Cumbre DX*) 9810 inaudible here though it had been easy before (Volodya Salmaniuk, BC)

**LIBYA** Voice of Africa has now settled with their English News broadcast at 0125-0130 on 15435 and received well here in South Asia. But there is some variation by one or two minutes. One day they were at 0125-0130 but another at 0127-0132 (Alok das Gupta, Calcutta, *Electronic DX Press*) Also here, but both this and //15415 with heavy side-splash; try 15235 (gh)

**MALTA** [non] Voice of the Mediterranean. Future plans are for: 1) Extension of the Mon-Sat programs to three hours (at present one sesquihour) with new 30 minute segments in French, German and Spanish. 2) Extension of the Sunday program to six hours, with the addition of a one hour segment in Spanish (Bob Padula, *Electronic DX Press*) English presently via 7155 Italy at 0530-0600 Mon-Sat (Erik Koie, *ibid.*)

**NICARAGUA** [non] *Así es Nicaragua* program heard at another time than Sat 2320 on TIAWR, 9725, Costa Rica, and I expect there are many more; Monday ending

at 1125, a production of Advent-Estéreo, Apartado 97, Managua; also outro for *Vistazo Internacional* of which *Así* may be a subsection; productions for the Adventist satellite network (gh)

**PAPUA NEW GUINEA** George Alokaka, Senior Technical Officer of NBC tells us: on the extension of schedule on 4890 noted in *Review of International Broadcasting*: We are now on until 1400; the government stepped up and provided some money; however, we are operating at 50 kW (rated 100 kW) as the power company does not have the necessary step-up transformers to provide us with full power (Hans Johnson, (c) *Cumbre DX*)

**ST. HELENA** R. St. Helena Day 1999! A final(?) transmission on SW (with support from the Cable & Wireless PLC) will take place on Saturday 23 Oct at 1900-2400 UT on 11092.5 kHz. More information to be found on the web-page <http://www.sthelena.se> (John Ekwall, St. Helena list)



**SPAIN** REE news in Catalan, Galician and Basque, given as 2200 last month, are actually at 2230. Best here is 15110, despite some splatter from DW on 15105 (Tim Hendel, AL)

**SRI LANKA** VOA's new Iranawila relay station tested its four 250 kW transmitters on an extensive schedule the week of July 17, unlike the one published last month, and was widely heard worldwide. Regular programming was expected to be only during local nights at first.

[non] A new Tamil station based in London, more pro-SL government than IBC, is TBC, already on satellite to Europe, on 15635 at 1330-1430 probably via CIS. Check website <http://www.tbc-london.com> (Victor Goonetilleke, Sri Lanka, RN Media Network)

**SWITZERLAND** An SWL friend tells me that he heard a comment during an SRI broadcast that they intend resuming their former European services from start of the winter schedule due to a large number of complaints received (Noel Green, UKoGBaNI, BC-DX)

**TURKEY** I heard VOT between 2200 and 2250 on 13640 with a big signal and (surprise, surprise) reasonably good audio. Audio was still rolled off in frequency response but quite pleasant to listen to in the 16 kHz bandwidth of the R-390A. Modulation percentage seemed close to 100. Programming consisted of tourist travel tips and popular music. They are running another essay contest this year. (Joe Buch, *swprograms*)

**UKoGBaNI** BBC Plans Move To South Bank. The BBC is planning a multi-million-pound media exchange next to the Thames that would make London's South Bank the broadcasting capital of Europe, writes Maurice Chittenden. Insiders say the corporation is thinking of housing its 2,000 London-based television, radio and World Service journalists together on one floor. Two years ago radio journalists were moved from Broadcasting House in central London to Television Centre in West London, but many staff were unhappy. The BBC wants the new building ready by the time the existing lease on Bush House, the Aldwych building that houses the World Service, expires in 2005.



London Weekend Television and GMTV are already on the South Bank and the proximity of channels would help guests shuttling between studios for interviews. In the past the BBC has grown piecemeal and now has 500 buildings across Britain (*Times* via Mike Cooper)

*Global audience - Back to record levels* is part of an extensive review of 1998/99 for World Service at: <http://www.bbc.co.uk/worldservice/aboutus/annualreview/index.html> Some excerpts: Listening to BBC World Service is as strong as ever, despite intense competition in many parts of the world. The global estimate for World Service's audience in any language returned to 143 million adults at the start of 1999 – up five million on the previous year. BBC World Service remains by far the most successful international radio broadcaster.

Of the global total, 35 million listen in English. Around 120 million tune in to the BBC's own transmissions and around 31 million hear BBC World Service programmes broadcast by other radio stations with some overlap in listening patterns. FM and Internet usage is increasing, but most people still rely on short wave.

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Greg Dyke is new BBC boss. Mr Dyke was chosen to succeed Sir John Birt to one of the most powerful jobs in British broadcasting. Controversy has surrounded Mr Dyke's candidature because of gifts totalling £50,000 that he made to the Labour Party before the last general election. The BBC Director General not only heads one of the greatest broadcasters in the world, but leads arguably the most important cultural institution in Britain (*BBC News Online* via Ivan Grishin)

BBC WS to NAm originally had 5975 Antigua and 6175 Delano on until 0700\*, but this summer the official schedule showed 5975 until 0500\*, 6175 at 0400-0700 as Delano, switching from 6185 before 0400, and 6175 from Canada before 0400. In reality, 6175 was vacant after 0400, whilst 6185 continued despite the constant clash with Mexico (gh)

From Kai Ludwig and Matthias Gatzke in Europe, word that BBC has reduced output on its famous 9410 kHz. For decades, 9410 transmitted BBC WS English 22 hours a day to Europe and the Middle East. BBC Monitoring informed me that WS has cut regular transmissions on 9410 at 0400-0500 and 0700-1500. It's part of a net decrease of 39 shortwave transmitter hours per day to Europe. This would be consistent with the strategic plan to reduce SW to Europe in favor of other media (Kim Elliott, *VOA Communications World* via John Norfolk)

Over the last 10 years or so, many of the HF antennas in the UK have been replaced with more modern types which produce less radiation to the rear of the antenna. The result of this is a general reduction in the energy transmitted towards North America but an increase in energy transmitted into Europe and Middle East. There is nothing we can do to improve reception in N. America in the 17-22 hours period without having an impact in the wanted BBC service areas (Geoff Spells, Merlin, via Andy Reid, ODXA, via Ivan Grishin)

Following last month's report on drastic cutbacks by Merlin Network One, from July, Virgin Radio was to be on SW Fri 2100-2300 on 9720, 7325, 6140; 2300-0100 6015; Sat 1300-1700 on 12035, 9750, 7130, all beamed to the SE quadrant (Nick Pashkevich, Russia, via Wolfgang Büschel) However, other stations or programs than Virgin were actually heard: No Virgin R. ID was heard, but DJ mentioned CMR – Country Music R? – but they were playing endless rap style songs (Nikolai Pashkevich, Russia, *BC-DX*) and identifying as "Flat Earth Radio." Heard usual Merlin ID on the hour, then straight into "Flat Earth Radio dance party" - no mention of Virgin whatsoever. I presume the name "Flat Earth Radio" is derived from the name of the dancing yellow sock character from Levi's recent TV commercials - he's called Flat Eric, and the techno tune is called "Flat Beat" (by Mr Oizo). (Flat Ian Kelly, Tilehurst, Reading, via Dave Kenny, BDXC-UK E-mail News)

**USA** WRMI has just started testing on a new frequency! 7465 daily at 0330-0500, to NAm, expected to be expanded (Jeff White, WRMI, on *HCJB DX Partyline*) Started mid-July; only non-religious program monitored was AWR *Wavescan* UT Sat 0415-0442. The R. Prague relay at 0330 had vanished. So Jeff has finally taken our advice to get a new frequency and hope the dentro-cubano commie jammers don't follow. Remains to be seen if he will also keep fuera-cubano Spanish programming off it to give the jammers no excuse to follow except spite (gh)

WRMI's main office has been located at a shopping center on Southwest 8th Street in Miami for eight years, but recently the mall was sold. We are now located in a very pleasant office building on the west side of Miami – just west of the airport. Please note our new address and phone numbers: Radio Miami International, 175 Fontainebleau Blvd., Suite 1N4, Miami, Florida 33172 USA. Telephone (305) 559-9764. Fax (305) 559-8186. Our P.O. Box, which is the address we always give on the air, is unchanged.

WRMI's transmitter site is located on the outskirts of Miami, on the northwest side of town near Hialeah Gardens. This location, of course, is not changing. Almost all of our programming is broadcast from the transmitter site, where we have our master audio control and a series of satellite dishes and telephone lines to take program feeds from around the world. A courier service takes the tapes from our office address to the transmitter site. Several local organizations record programs in our studio on Fontainebleau Boulevard for later broadcast, and we sometimes do live transmissions, such as "Viva Miami," from there (WRMI website)

WWBS, 1900, at 1150, extremely strong with man preaching in English. Generating 17 kHz spurs above and below on 11866, 11883, 11917, and 11934. Tuned out and came back at 1200 to find it gone (Dave Valko, PA, *The Four Winds*)

Bandscanning on the analog ICF-5900W, came across SSB on 12180 at 2022. Was wacky paranoid call-in talkshow typical of WGTG. 12180 is USB only, no carrier, and this show was //WWCR on 12160; how convenient. Dave Frantz told me previously he planned to use 12 MHz; confirmed at 2100 as "Genesis Communications Network on WGTG, McCaysville, Georgia" – GCN with a Minnesota address. By this time 12160 was no longer // (gh)

WGTG has also given *American Dissident Voices* a new lease on life. Apparently, even the National Alliance has finally lost patience with WRNO's non-signal. Heard in progress at 0310 UT Sun on 6890 USB with William Pierce. Checked on the National Alliance website and found that WGTG was listed Saturdays on 6890 (2300 Sat and 0300 Sun). Probably linked to the station's

willingness to carry Ernst Zundel's *Another Voice of Freedom* last heard at 2200 Sun on 6890 (Hans Johnson, *Cumbre DX*)

Awful anti-Semitic rhetoric can be heard on some stations, such as WGTG 5085 UT Wed and Thu 0100. In fact, some of the exact wording heard there was also associated with the recent synagogue bombings in California (Loren Cox, KY)

Fundamental Broadcasting Network in North Carolina will soon have the USA's newest shortwave station on the air. They have installed and tested an Armstrong 50 kW transmitter. The station still has to conduct some further tests, but hoped to be on the air with programs by late July. Primary target will be Europe, although the initial broadcasts will probably occur in the local evening. Programming will be a relay of the FBN Christian net.

Calvary Chapel of Twin Falls, Idaho, acquired KGEI's 250 kW transmitter some years back. Chapel officials say they have no plans for this transmitter, preferring to concentrate on their FM translator network instead. Sadly, this once fine transmitter sits in pieces, sans antenna, in a potato hut (a half-buried barn) in Idaho.

KJES has no plans for adding other transmitters, but hopes to expand its present transmitter to 24 hours pending funding. They also have a small (probably about 5 kW) transmitter that they use as a backup when the other one is down. Time is free for those who can preach without identifying themselves, leaving an address, or asking for money – so far, no takers. The reason that the scriptures are repeated again and again is two-fold: 1) For people who don't have a Bible; 2) As a listen and learn tool for memorizing the scriptures. Present schedule is: English 1300-1500 11715, 1800-1900 15385, and 0100-0230 7555. Spanish 1500-1600 11715, 1900-2000 15385. All this per the station.

WRNO - I was finally able to talk with Ashton Hardy (station counsel) and find out what was really happening here. WRNO had a fire in December that destroyed their main transmitter; that's why they aren't on 15 MHz. No one was hurt as the transmitter was unattended at the time. In fact, a call from the FCC about WRNO spluttering all over the 19 meter band is what prompted the engineer to drive out to the site. The remaining transmitter is operating on low power but is confined to the 7 MHz range. The station, once for sale, has been taken off the market until the old transmitter can be fixed (Hardy believes it is beyond repair) or a new one is bought. They are waiting for the insurance claim to be settled. Once another transmitter is obtained, the station will be for sale again.

WBCQ - Al Weiner had this to say about his station: Things are great at WBCQ, our time is mostly sold and we are running some great alternative programs. We have purchased our second transmitter, a Collins, and will have pictures of it on our web site. As soon as we get our construction permit from the FCC, we will start. This transmitter is tunable and we will use it with a bi-directional (Europe-North America) rhombic. WBCQ II may be on as early as the fall. We also have a 60 kW SSB transmitter on site. We will do some testing on SSB, but that is a year or two away (All the above: Hans Johnson (c) *Cumbre DX*)

The *Washington Post* reported that the United States Government began making payments to women who won a sex discrimination lawsuit against the Voice of America. The litigation began 22 years ago, and 15 years ago a judge ruled that VOA, from 1974 and 1984, did engage in sex discrimination by doing such things as altering the grades of hiring exams and throwing away applications from women. The U.S. government appealed the case twice, taking it as far as the United States Supreme Court. The payments, averaging 485,000 dollars, were made to eight women and to the family of a ninth woman who died since the beginning of the lawsuit. These are the first payments in a case that involves complaints by 1,134 women.

Sanford Ungar was sworn in as the director of the Voice of America. Mr. Ungar was previously Dean of the School of Communication at American University here in Washington. Before that he was a journalist for National Public Radio, and in the print media (Kim Elliott, *VOA Communications World* via John Norfolk)

*World Of Radio* on WWCR added Sat 1930 on 12160 (gh)

**VANUATU** R. Vanuatu - Here is what Ambong Thompson, Program Director, had to say. After complaints from listeners, we started using two frequencies again. Our audience is outside the capital and in overseas countries such as Fiji, Australia, and New Zealand. We are on 3945 and 4960 at 0700-1115 with both transmitters running about 10 kW. We don't use 7260 this time of year, but plan to use starting again starting in about October (Hans Johnson (c) *Cumbre DX*)

**YUGOSLAVIA** R. Yugoslavia's NAm service came back in early July, at 0000 on 9580 in English, and on new //11850, but the latter is mixed with China (Mali?) in Portuguese (Joe Hanlon, PA)

We were hearing it too, but 11850 was not among the frequencies listed at the beginning. Same old same old soporific style but nice jingles. Also found English back at 0430 on same two, but this time 11850 was clear, 9580 weaker and side-splashed (gh)

While listening to their Serbian broadcast at 0000 on a Sunday – they use English at 0000 Mon-Sat – we were treated to some nice folk music, a welcome change from their regular all-news, all-talk, all-zzzz English broadcasts. RY also had some Orthodox church music during the last ten minutes of one English transmission at 0000. I also noted some new jingles (Ivan Grishin, Ont., *Review Of International Broadcasting*)

...Until the Next, Best of DX and 73 de Glenn!

Gayle Van Horn

## 0012 UTC on 4471.8

BOLIVIA: Radio Movima. Spanish. Bolivian music to female announcer 0019. Music program and ID at 0037, SINPO=24343. Bolivia's **Radio Mosoj Chaski** audible 3310, 0047-0104. Music and chat to several IDs, 0104\*. (Mark Veldhuis, Borne, Netherlands/*Hard Core DX*) **La Cruz del Sur** 4874.91 heard at 2350 with religious text and *El Amor* tune. (Ruud Vos, Utrecht, Netherlands/*HCDX*)

## 0020 UTC on 6987.1

PERU: Radio San Miguel de El Faique. (Tent) Spanish. Romantic ballads and text with very little readability. Two evenings later from 0106, exactly on 6987 with lively Andean music, DJ's patter and references to San Miguel de El Faique. (Bob Hill, Littleton, MA/*The Four Winds*) **Radio Santa Rosa** 6045.6, 0950 with ID at 1001 into program *La Hora Huanuquena*. (Rafael Rodriguez, Santafe de Bogota, DC, Colombia/*TF W*).

## 0059 UTC on 15240

ITALY: RAI. Report on new finds in an Etruscan archaeological site, // 9675, 11800. (Bob Fraser, Cohasset, MA) RAI 6010 at 0306. (Howard J. Moser, Lincolnshire, IL)

## 0110 UTC on 9665

RUSSIA: Voice of. Report that *Mir* may be saved if new funds are found. (Fraser, MA) **VOR** 0243 on 7180. (Moser, IL) *Kaleidoscope* program featuring a true romance of World War II, // 11675. (Fraser, MA)

## 0130 UTC on 4840

VENEZUELA: Ecos del Torbes. Spanish. Commentary for sporting event to Ecos del Torbes ID, and freq quote, "Desde la patria del libertador" at 0156. (Ralph Brandi, USA/*Hard Core DX*)

## 0200 UTC on 11725

ROMANIA: Radio Romania Intl. English service to 0255, // 11740, 17735. Freqs 9570, // 11810 blocked by China Radio and Radio Taipei. English 2300-2355 on 11810, // 9570 and 15105 inaudible due to Deutsche Welle's Antigua relay. (Lee Silvi, Mentor, OH)

## 0240 UTC on 4750

PERU: Radio San Francisco Solano. Folk music amid program "por los caminos de nuestro Peru." Station sign-off 0259, without national anthem. (Rafael Rodriguez, Santafe de Bogota D.C., Colombia/*TFW*) Peru's **Radio def Paraton**, Huarmaca 0430, now 6955.5 (ex 6676), heard with chicha music, frequent time checks and full ID at 0501 after Andean flute intro...heard past 0530. (Paul Ormandy, Oamaru, New Zealand/*TFW*; Harold Frodge, Midland, MI)

## 0251 UTC on 7160

ALBANIA: Radio Tirana. Program update on the aftermath of NATO strikes. (Moser, IL) Italian service 1802, 7239.92 // 6110.02. News, IDs, economic report and music program. (Serra, Italy/*TFW*)

## 0306 UTC on 6010

ITALY: RAI. Italian service to North America with news and features. (Moser, IL)

## 0425 UTC on 9721.7

PERU: Radio Victoria. Spanish. Religious programming to IDs, interference from Radio Exterior España, fair signal quality. (Erich Bergmann, Ansbach, Germany/*HCDX*) Tentative logging on Peru's **Radio Atlantida** 4790, 0107. Music and announcements to Andean flutes, possible ID, fade out by 0130. (Veldhuis, NLD/*HCDX*)

## 0435 UTC on 17580

AUSTRALIA: Radio. Show on fishing regulations off the Great Barrier Reef. (Moser, IL)

## 0750 UTC on 6300

EURO PIRATE: Radio Blue Star. Tentative. Folk music to Dutch script, SINPO=23332. **Radio Wonderful via IRRS** on 7120, 0810 with music and IDs. **Farmers From Holland** 0840 at 6284 in Dutch. (Bruno Percolatto, Pont Canavese, Italy/*Radiatorama Pirate News/TFW*).

## 0853 UTC on 5019.98

SOLOMON ISLANDS: SIBC. Identification 0853 as, "Solomon Islands Broadcasting Corporation," into *Sports Roundup* program. Regional news and notice of an upcoming public holiday into ID repeat, news main points and economic outlook. (Brandi, USA/*HCDX*)

## 0906 UTC on 21745

CZECH REP.: Radio Prague. Program about Kafka and theater play to musical break. Station ID, announcement and item about International Music Festival in Prague. (Giovanni Serra, Rome, Italy/*TFW*)

## 0937 UTC on 9710

LITHUANIA: Radio Vilnius. Economic and politics program to IDs. Frequency quote/times to email address and talk on summer holidays for Lithuanians, fair signal. (Serra, Italy, *TFW*)

## 1050 UTC on 4820

HONDURAS: La Voz Evangelica. Spanish. Religious programming to flute music. Station ID at 1100, good reception. (Ellen Jordan, IA/*Cumbre DX*)

## 1100 UTC on 6140

CUBA: Radio Rebelde. Spanish sign-on, "muy buenos dias desde Radio Rebelde en studios la Habana," address and AM/FM/SW freqs. (Cris Martin, Australia/*Cumbre DX*)

## 1130 UTC on 18930

SWEDEN: Radio Sweden. English broadcast to North America including several IDs and *60 Degrees North* program. (Silvi, OH)

## 1230 UTC on 15155

FRANCE: Radio France Intl. *Club 9516* program with poor quality, // 15540 even worse! News of Africa 17850 at 1600, // 11615, 17605. (Fraser, MA)

## 1245 UTC on 13650

CANADA: Radio Canada Intl. *Quirks and Quarks* reports on a new virtual space optic telescope. (Fraser, MA)

## 1245 UTC on 21530

SOUTH AFRICA: Channel Africa. Sign-on interval signal to 1245 to numerous IDs. Drum beat signal to time pips. Station ID/freq quote into African continent news features. (Serra, Italy/*TFW*)

## 1631 UTC on 7165

ETHIOPIA: Radio Ethiopia. Very poor signal // 9560 with news and ID at 1635. Political news update to "this program comes to you from the external service of Radio Ethiopia" (repeated twice). Promo for French service, covered by unid European station. (Serra, Italy/*TFW*) Noted 1710-1730 on 5990.5, unid language. (Walter Mola, Torino, Italy/*Gatflash!*)

## 1820 UTC on 15345

MOROCCO: RTV Marocaine. Arabic broadcast to North Africa, including Moroccan music and text. (Silvi, OH)

## 2115 UTC on 15185

EQUATORIAL GUINEA: Radio Africa. Usual extended religious programming to full ID at 2253-58 with mention of 7190 as well as 15 megahertz frequency. Address quote for Cupertino, California, as well as Malabo, Nigeria, Liberia and Ghana. Request of U.S. dollar or two IRCs for QSL response. Religious text presumed, covered by Radio France \*2258. (Frodge, MI)

## 2215 UTC on 9645

BRAZIL: Radio Bandeirantes. Portuguese. Fast paced DJ amid interference from a Chinese station. Tentative ID for Brazil's **Radio Marumby** on 9665.1, 2215 with sermon and brief musical interludes. (Zacharias Liangas, Retziki, Greece/*HCDX*)

## 2230 UTC on 4825

BRAZIL: Radio Educadora de Braganca. Portuguese. Music, IDs and station jingles. Sports coverage from Brazil's **Radio Clube do Para**, Belem on 4885 at 2250. Roberto Pavanello, Vercelli, Italy/*Gatflash!*)

## 2302 UTC on 9900

EGYPT: Radio Cairo. English feature on Alexandria to 2314. Time pips and anthem to Arabic announcement, followed again by English. Egyptian sports news segment. (Frodge, MI)

## 2350 UTC on 4840

MAURITANIA: ORT Mauritanie. Arabic. Indigenous music to announcer's close at 0100. National anthem (matches with MIDI file on <[www.albany.net/~alcue](http://www.albany.net/~alcue)>. Signal drifting from 4844 down to 4840.9. (Brandi, USA/*HCDX*)

Thanks to our contributors — Have you sent in YOUR logs?  
Send to **Gayle Van Horn**, c/o Monitoring Times (or e-mail [gayle@grove.net](mailto:gayle@grove.net))  
English broadcast unless otherwise noted.

## September...and the DXing is Easy!

Ah September...at last! Ready for the new DX season? If you're like me, you've been ready since June! Indeed, the high summer static levels are challenging, even for the most persistent listener!

Thankfully, it's that time of the year when twilight and nighttime patterns improve. Look for stations from Europe, South America and Africa to fade in earlier (and remarkably improved) prior to 0000 UTC.

In the tropical bands, (4750-4995 and 5005-5060 kHz) East Asia and Indonesia are heard beginning at twilight in the evenings and anytime from 1000-1500 UTC, depending on your location. Another favorite area is the Indian subcontinent audible by mid November or earlier. Don't forget the Papua New Guinea stations in the early morning hours, for a true taste of regional programming! Did you know that the various PNG



stations can boost your country totals by six?

If you are a mediumwave listener, you're in luck. Fall/winter DXing is the best time for nabbing those cross country signals! Doug Smith's *American Bandscan* column will keep you up to date on news.

Don't forget to enclose return postage with your reception reports. Your very best source for worldwide mint postage stamps, as well as DX supplies, is *Bill Plum's DX Supplies*. As an active DXer and QSLer, I have used Bill's service for nearly ten years, and have found his prices good, his service excellent. Send Bill an SASE for his latest price list to: 12 Glenn Road, Flemington, NJ 08822-3322. Tell him you read it in *MT*.

Please let me know what you are hearing and QSLing, for what I hope will be your best DX season ever!

### ALGERIA

Radio Algerienne, 11715 kHz. Full data unsigned card, plus two station decals and program schedule. Received in three months for one U.S. dollar, one IRC and a souvenir postcard. Station address: 21 Boulevard des Martyrs, Algiers 16000, Algeria. (Lee Silvi, Mentor, OH)

### ARGENTINA

RAE, 11710 kHz. Full data 41<sup>st</sup> anniversary card signed by Maria Ines Tebares-English Dept. Received in 5 months for an English report and one U.S. dollar. Station address: C.C. 555-Correo Central, 1000 Buenos Aires, Argentina. (Tom Banks, Dallas, TX)

### BENIN

ORTB Cotonou 4870 kHz. Full data station logo card unsigned. Received in 40 days for a French report and mint stamps (used on reply with a self-addressed envelope). Station address: Boite Postal 366, Cotobou, Benin. (Brian Bagwell, St. Louis, MO)

### BOLIVIA

Radio Mosoj Chaski, 3310 kHz. Full data email verification from Eldon Porter. Received for a Spanish email report. Station address: Casilla 736, Cochabamba, Bolivia. Email: <[eporster@bo.net](mailto:eporster@bo.net)> or <[chaski@bo.net](mailto:chaski@bo.net)> (Ruud Vos, Utrecht, Netherlands/*Hard Core DX*)

### GUINEA

RTG Conakry, 4900 kHz. Full data letter received in 38 days for a French report, mint stamps, self-addressed envelope (not used) and one U.S. dollar. Station address: Boite Postal 391, Conakry, Guinea. (Frank Hillton, Charleston, SC)

### MEDIUM WAVE

KAZP 1620 kHz AM. Verification letter signed by Stephen D. Classen -Director of Engineering. Received in 12 days for a taped report. Station address: 1001 Farnam-on-the-Mall, Omaha, NE 68101. (Patrick Martin, Seaside, OR)

KBEE 860 kHz AM. Verification letter signed by Rusty Keys - Program Director. Received in nine days for an AM report. Station address: 434 Bearcar Dr., Salt Lake City, UT 84115. (Martin, OR)

KTBK 1700 kHz AM. Form letter with photo of tower signed by Hue Beavers - Chief Engineer. Received in 82 days for a taped report. Station address: 3500 Maple Ave., #1600, Dallas, TX 75219. Texas QSL # 55 and #2576 MW QSL! (Martin, OR)

KWOM 1600 kHz AM. Email QSL verification in two days after followup, from Randy H. Station address: 709 Jefferson Ave., SW, Watertown, MN 55388. Email: <[randy@cmgate.com](mailto:randy@cmgate.com)> (Martin, OR).

### MONACO

Trans World Radio via Monte Carlo, 9870 kHz. Full data card plus pennant, decal, souvenir postcard and personal note. Received in 90 days for an English report and

one U.S. dollar. Station address: Boite Postal 349, Monte Carlo, Monaco-Cedex. (Silvi, OH)

### PAPUA NEW GUINEA

(New Guinea) NBC - Radio Western Highlands, 3375 kHz. Full data NBC logo card signed by Essau Okole, plus personal note. Received in one month for an English report and one U.S. dollar. Station address: P.O. Box 311, Mount Hagan, WHP, Papua New Guinea. (Richard Jary, Australia/*Cumbre*)

### PERU

Radio La Hora, 4855 kHz. Full data verification letter signed by Lic. Carlos Gamarra Moscoso - Director, received for a Spanish report. Station address: Avenida Garcilaso 411, Distrito de Wanchaq, Cusco, Peru. (Max van Arnhem, Netherlands/*HCDX*)

### RWANDA

Radiodiffusion Rwandaise, 6055 kHz. Full data QSL card unsigned, received in 39 days for a French report and one U.S. dollar. Station address: Boite Postal 404, Kigali, Rwanda. (Enzio Gehrig, Spain/*HCDX*)

### TAIWAN

Radio Taipei Int'l, 9610 kHz. Full data (except for site) *Insects in Taiwan* card unsigned, plus sticker, newsletter, schedule and report forms. Received in 36 days for an English report on RTI report form. Station address: P.O. Box 24-38, Taipei, Rep. of China. (Randy Stewart, Springfield, MO)

### TURKMENISTAN

Turkmen Radio 5015 kHz. Personal letter in 38 days for an English report, two IRCs and souvenir postcard. Station address: National TV & Radio Broadcasting Co., Mollanepes St. 3, 744000 Ashgabat, Turkmenistan. (Gehrig, Spain/*HCDX*)

### UNITED KINGDOM

Radio Canada Int'l via Skelton, UK, 11975 kHz. Full data Nuavut Territory card signed by Bill Westenhaver, plus pennant, program schedule and personal note from veri signer. Received in 18 days for an English report. Station address: P.O. Box 6000, Montreal Canada H3C 3A8. (Stewart, MO)

### UNITED STATES

HAARP - Gakona, Alaska, 3.39/6.99 MHz. Full data antenna card signed by Ed. Received in 39 days for a cassette report, three mint stamps and address label (used on reply plus one mint stamp, others returned). Station address: HAARP Research Facility, P.O. Box 271, Gakona, Alaska 99586. (Bill Wilkins, Springfield, MO)

### ZAMBIA

Zambia Nat'l Broadcasting Corp., 4910 kHz. Full data black/white station logo card signed by Mr. Patrick Nkula - Director of Engineering. Received in five months for an English report, one U.S. dollar and a souvenir postcard. Station address: P.O. Box 50015, Lusaka, Zambia. (Ellen Jordan, Iowa/*Cumbre*)



## My First Radio .....

By Brian Rogers

When my mother moved into a senior apartment, there were boxes and boxes of “stuff” she’d accumulated over the nearly 50 years she’d lived in her home that we had to examine before we sold the place.

Most of the stuff, the family knew, would be pitched because none of us had room for it. But before we tossed it into garbage bags for an appointment with curbside pickup, we wanted to look at it all one more time and maybe keep one or two things that were especially meaningful.

So there we were one Sunday afternoon seated cross-legged on my mother’s basement floor surrounded by dusty cardboard boxes.

We explored such memorabilia as the partially filled savings stamp books containing the red and green stamps my sister and I saved during World War II, a photograph of me in a Cub Scout uniform standing in front of my dad’s 1940 Oldsmobile, and an autograph book containing signatures of the 1947 Detroit Tigers baseball team including their star pitcher, Hal Newhouser.

None of that meant anything to me, so I threw it all away.

But hiding in the trash was something whose discovery made the whole afternoon worthwhile: a photograph of the very first shortwave radio I ever bought with my own money.

It was a Hallicrafters S-38C. I’d bought it in 1953 with money I’d earned delivering our local weekly newspaper and working weekends in a neighborhood grocery store.

Before that I’d listened to foreign shortwave stations on the upright Sears Silvertone console in our living room. My dad and I had connected a length of red and white striped, waxed wire to the antenna terminal on the back and slid it under the rug. I always thought that antenna looked like a twisty, skinny candy cane. I spent many a happy hour listening to the world while sprawled on the floor in front of that radio.

But using the Silvertone for shortwave listening was a far-from-ideal situation. One reason was that, while my father shared some of my enthusiasm for hearing far-off places,

my mother had no appreciation whatsoever for foreign radio stations. She much preferred spending her evenings listening to “Henry Aldrich,” “Our Miss Brooks,” Bob Hope, and George Burns and Gracie Allen.

I knew that, in order to pursue the hobby the way I wanted, I’d need my own shortwave radio. I also knew my family couldn’t afford one and I’d have to pay for it myself. Hence the paper route and grocery store job.

I bought lots of radio magazines even then and read all the advertisements for shortwave receivers I could find. Two very popular low-priced models were the Hallicrafters S-38C and the National SW-54. Both, as I recall, sold for \$49.95.

Those companies made higher priced receivers, too; and for a while I thought I might get a Hallicrafters S-40B which had more tubes and an RF gain control. But it cost nearly \$100 and it would take too long to save that much. I decided cheaper and quicker was better.

I agonized for months while working and saving my money deciding whether to buy the S-38C or the National. I read every advertisement I saw for the radios at least a dozen times and changed my mind oftener than I changed my socks.

Finally, money stuffed in my billfold, I boarded a bus one Saturday morning to ride ten miles to a store in downtown Detroit called Reno Radio. I still didn’t know which receiver I’d buy.

But, in the store, when I saw them side by side, I knew. The Hallicrafters looked bigger and seemed to exude a masculine, military aura. The Hallicrafters it would be!

I counted out my money and laid it on the counter. The salesman wore a nametag that said “W8LZM.” He told me he was the “Little Zebra’s Mother.”

I carried my prized S-38C—still in its



string-wrapped box—to the bus stop and waited with no patience whatsoever for my ride home.

After what seemed like forever and a day I was finally in my bedroom unpacking the new receiver and setting it gingerly in the place on my desk I’d cleaned and reserved for it more than a week before. The antenna, a length of bare copper wire running from my window to a tree in our back yard, had also been ready more than a week.

I plugged the radio in and turned it on. Its tubes brightened with an orange glow. Its warming insulation, metal, glass, and plastic combined to emit an acrid yet sweet smell I’ll never forget.

The photograph from my mother’s basement showed some of the QSL cards I received from hams around the world I heard on the S-38C and sent reception reports to between 1953 and 1955 when I went away to college. I even had a novice ham license myself for a while. My call letters were WN8QNP. I used the receiver when working stations in the 80 and 40 meter CW bands.

Like a big dummy, I sold the radio in my college freshman year because I needed money and didn’t think I’d ever use it again.

I wish I still had it. Just think how majestic it would look now in an honored place alongside my Kenwood R-2000 and Sangean ATS-808!

## HOW TO USE THE SHORTWAVE GUIDE

0000-0100 twhfa USA, Voice of America 5995am 6130ca 7405am 9455af  
 ① ② ⑤ ③ ④ ⑥ ⑦

### Convert your time to UTC.

Broadcast time on ① and time off ② are expressed in Coordinated Universal Time (UTC) – the time at the 0 meridian near Greenwich, England. To translate your local time into UTC, first convert your local time to 24-hour format, then add (during Daylight Savings Time) 4, 5, 6, or 7 hours for Eastern, Central, Mountain or Pacific Times, respectively. Eastern, Central, and Pacific Times are already converted to UTC for you at the top of each page.

Note that all dates, as well as times, are in UTC; for example, a show which might air at 0030 UTC *Sunday* will be heard on *Saturday* evening in America (in other words, 8:30 pm Eastern, 7:30 pm Central, etc.).

### Find the station you want to hear.

Look at the page which corresponds to the time you will be listening. On the top half of the page English broadcasts are listed by UTC time on ①, then alphabetically by country ③, followed by the station name ④. (If the station name is the same as the country, we don't repeat it, e.g., "Vanuatu, Radio" [Vanuatu].)

If a broadcast is not *daily*, the days of broadcast ⑤ will appear in the column following the time of broadcast, using the following codes:

#### Day Codes

s Sunday  
 m Monday  
 t Tuesday  
 w Wednesday  
 h Thursday  
 f Friday  
 a Saturday

In the same column ⑤, irregular broadcasts are indicated "tent" and programming which includes languages besides English are coded "vl" (various languages).

### Choose the most promising frequencies for the time, location and conditions.

The frequencies ⑥ follow to the right of the station listing; all frequencies are listed in kilohertz (kHz). Not all listed stations will be heard from your location and virtually none of them will be heard all the time on all frequencies.

Shortwave broadcast stations change some of their frequencies at least twice a year, in April and October, to adapt to seasonal conditions. But they can also change in response to short-term conditions, interference, equipment problems, etc. Our frequency manager coordinates published station schedules with confirmations and reports

from her monitoring team and *MT* readers to make the Shortwave Guide up-to-date as of one week before publication.

To help you find the most promising signal for your location, immediately following each frequency we've included information on the target area ⑦ of the broadcast. Signals beamed toward your area will generally be easier to hear than those beamed elsewhere, even though the latter will often still be audible.

#### Target Areas

af: Africa  
 al: alternate frequency (occasional use only)  
 am: The Americas  
 as: Asia  
 au: Australia  
 ca: Central America  
 do: domestic broadcast  
 eu: Europe  
 me: Middle East  
 na: North America  
 om: omnidirectional  
 pa: Pacific  
 sa: South America  
 va: various

### Consult the propagation charts.

To further help you find a strong signal, we've included a chart on page 60 which takes into account conditions affecting the audibility of shortwave broadcasts. Simply pick out the section of the chart for the region in which you live and find the line for the region in which the station you want to hear is located. The chart indicates the optimum frequencies (in megahertz-MHz) for a given time in UTC. (Users outside North America can use the same procedure in reverse to find best reception from North America.)

### Choose a program or station you want to hear.

Some selected programs appear on the lower half of the page for prime listening hours – space does not permit 24-hour listings. Our program manager changes the stations and programming featured each month to reflect the variety available on shortwave, though BBC programs are almost always included.

Occasionally program listings will be followed by "See X 0000." This information indicates that the program is a rerun, and refers to a previous summary of the program's content. The capital letter stands for a day of the week, using the same day codes as in the frequency listing (see above), and the four digits represent a time in UTC.

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## PROGRAM HIGHLIGHTS

JIM FRIMMEL, PROGRAMMING MANAGER

### BBC World

Apple Computer introduced QuickTime (QT) TV, its latest cross-platform internet software program, at the MacWorld Expo in New York City in July. So what does this have to do with any of the topics covered by *Monitoring Times*, you might ask? Well, for starters, you can now receive BBC World TV live via the Internet and without using a browser.

Until now, BBC World TV has been available around the world via local cable operators. This is not the same BBC TV that is offered by the Dish Network (called BBC America), although some programs are the same. BBC World TV features news on the hour, a daily interview program, lifestyle programming, and special weekend features.

If you happen to subscribe to the Beeb's monthly magazine *BBC On Air*, you can find a program chart and section devoted to BBC World. Or, you can visit the BBC World web site at [www.bbcworld.com](http://www.bbcworld.com) where you can get channel information and also receive the live video via your browser. There is also a link to Apple's web site for downloading the QT player.

The free QT TV Player is a joy to operate and the most modern-looking streaming media device of its kind. Satisfactory results can be had using only a 28.8 modem connected to a moderately fast PC or Mac. Pull down a drawer at the bottom of the player's screen to reveal places for 42 of your favorite channels.

Besides the BBC, other "channels" currently available are news from Fox, Bloomberg and ABC, sports from ESPN and Fox, the Weather Channel, National Public Radio, Virgin Radio, Disney, HBO, and WGBH in Boston. There are also a number of music channels.

So when will the shortwave radio stations of the world jump on the QT bandwagon? Only time and money will tell. You see, Apple does not charge a "server fee" for QT providers, whereas RealAudio, the current world favorite streaming media format, does.



## FREQUENCIES

0000-0100	Anguilla, Caribbean Beacon	6090am				0000-0030	Thailand, Radio	9655af	9690af	11905af	
0000-0100 vl	Australia, ABC/Katherine	5025do				0000-0030	UK, BBC World Service	3915as	7110as	11945as	17615as
0000-0100 vl	Australia, ABC/Tent Creek	4910do				0000-0100	UK, BBC World Service	5965as	5970sa	5975am	6175am
0000-0100	Australia, Radio	9660pa	12080va	15240pa	17580va			6195as	9410as	9590am	9915sa
		17750as	17795va	21740va				11955as	12095sa	15310as	15360as
								17790as			
0000-0015	Cambodia, Natl Radio Of	11940as				0000-0100	Ukraine, R Ukraine Intl	5905eu	6020eu	6090eu	
0000-0100	Canada, CBC N Quebec Svc	9625do				0000-0100	USA, KALJ Dallas TX	5810na			
0000-0100	Canada, CFRX Toronto	6070do				0000-0100	USA, KJES Vado NM	7555na			
0000-0100	Canada, CFVP Calgary	6030do				0000-0100	USA, KTVN Salt Lk City UT	15590am			
0000-0100	Canada, CHNX Halifax	6130do				0000-0100 vl	USA, KVOH Los Angeles CA	17625am	17775al		
0000-0100	Canada, CKZN St John's	6160do				0000-0100	USA, KWHR Naalehu HI	17510as			
0000-0100	Canada, CKZU Vancouver	6160do				0000-0030	USA, Voice of America	7215as	9770as	11760as	15185as
0000-0100	Costa Rica, RF Peace Intl	6975am	15050am	21460am				15290as	17735as	17820as	
0000-0027	Czech Rep, R Prague Intl	11615na	13580na			0000-0100 twfha	USA, Voice of America	5995am	6130ca	7405am	9455af
0000-0100	Ecuador, HCJB	9745na	12015na	21455va				9775am	11695ca	13740am	
0000-0030	Egypt, Radio Cairo	9900am						7415na			
0000-0100 vl	Guatemala, Radio Cultural	3300do				0000-0100	USA, WBCQ Monticello ME	5825na	13615na		
0000-0100	Guyana, GBC/Voice of	5950do				0000-0100	USA, WEWN Birmingham AL	5085am	9400am		
0000-0045	India, All India Radio	7410as	9705as	9950as	11620as	0000-0100	USA, WGTG McCaysville GA	7580na			
		13625as				0000-0100	USA, WHRA Greenbush ME	5745na	7315na		
0000-0015	Japan, Radio/NHK	6155eu	6180eu	9665af	11705na	0000-0100	USA, WHRI Noblesville IN	11950am			
		11815as	13650as			0000-0100	USA, WINB Red Lion PA	7490na			
0000-0100	Kiribati, Radio	9810do				0000-0100	USA, WJCR Upton KY	9955am			
0000-0100	Liberia, LCN/R Liberia Int	5100do				0000-0100 m	USA, WRMI/R Miami Intl	7355na			
0000-0100	Malaysia, Radio	7295do				0000-0100	USA, WRNO New Orleans LA	9430na	15285ca		
0000-0100	Malaysia, RTM Sarawak	7160do				0000-0100	USA, WSHB Cypress Crk SC	3215na	5070na	7435na	13845na
0000-0100 vl	Malaysia, RTM Kota Kinabalu	5980do				0000-0100	USA, WWCR Nashville TN	6085na	9505na		
0000-0100	Namibia, NBC	3270af	3289af			0000-0100	USA, WYFR Okeechobee FL	4960do			
0000-0100	Netherlands, Radio	6165na	9845na			0000-0030 vl	Vanuatu, Radio	6155eu	6180eu	9665af	11705na
0000-0100	New Zealand, R NZ Intl	17675va				0015-0100	Japan, Radio/NHK	9655na			
0000-0100	North Korea, R Pyongyang	3560am	11845am	13650am	15230am	0030-0100	Austria, R Austria Intl	9022am	9795ca	11970na	
0000-0100 vl	Papua New Guinea, NBC	9675do				0030-0000	Lithuania, Radio Vilnius	9855am			
0000-0100	Philippines, FEBC R Intl	15450as				0030-0100 vl	Solomon Islands, SIBC	5020do			
0000-0100	Russia, IBC Tamil	9355as				0030-0100	Sri Lanka, Sri Lanka BC	6005as	9730as	15425as	
0000-0030	Serbia, Radio Yugoslavia	9580eu	11850eu			0030-0100	Thailand, Radio	9655as	11905as	15395na	
0000-0100	Singapore, R Corp Singapore	6150do				0050-0100	Italy, RAI Intl	9675na	11800na	15240na	
0000-0100	Spain, R Exterior Espana	15385na									

## SELECTED PROGRAMS

## Sundays

- 0000 Japan, NHK/Radio: News. World news from NHK International.
- 0000 UK, BBC London (as): The World Today (EAs). The World Service breakfast program.
- 0000 UK, BBC London (as): World News. Broadcast on the hour of 5, 10, or 15 minutes in length.
- 0005 UK, BBC London (as): From Our Own Correspondent. BBC correspondents comment on the background to the news.
- 0010 Japan, NHK/Radio: Asia Weekly. A magazine of news from other Asian broadcasters, Asian people in Japan, music, Asia hotline, short story, and music.
- 0030 UK, BBC London (as): Agenda. This series examines the latest ideas and trends.

## Tuesday-Saturday

- 0000 UK, BBC London (as): The World Today (EAs/SAs). See S 0000.
- 0000 UK, BBC London (as): World News. See S 0000.
- 0000 Japan, NHK/Radio: News. See S 0000.
- 0015 Japan, NHK/Radio: 44 Minutes. See M 0515.
- 0017 Japan, NHK/Radio: Interview Corner. See M 0517.
- 0031 Japan, NHK/Radio: Close Up. See M 0534.
- 0047 Japan, NHK/Radio: News Commentary. See M 0547.
- 0050 Japan, NHK/Radio: Tumbling Dice. See M 0552.

## Mondays

- 0000 Japan, NHK/Radio: News. See S 0000.
- 0005 UK, BBC London (as): Health Matters. Keeps track of new developments in the world of medical science, as well as ways of keeping fit.
- 0010 Japan, NHK/Radio: Hello from Tokyo. See S 0110.
- 0030 UK, BBC London (as): Omnibus. Each week a half-hour programme on practically any topic under the sun.

## Tuesdays

- 0005 UK, BBC London (as): Discovery. In-depth look at scientific research.
- 0030 UK, BBC London (as): Pick of the World. Daire Brehan celebrates the diversity and range of the whole of BBC World Service output.

## Wednesdays

- 0005 UK, BBC London (as): One Planet. Charles Haviland and Richard Black host this new program about development and the environment.
- 0030 UK, BBC London (as): Sports International. Live commentaries and interviews, features and discussions.

## Thursdays

- 0005 UK, BBC London (as): The Works. Alun Lewis looks at the impact of tomorrow's technology.
- 0030 UK, BBC London (as): Assignment. A weekly examination of a topical issue.

## Fridays

- 0005 UK, BBC London (as): Science in Action. The latest in science and technology.
- 0030 UK, BBC London (as): Focus on Faith. Alison Hilliard talks to church leaders about their hopes for the future.

## Saturdays

- 0000 UK, BBC London (as): The World Today (EAs). See S 0000.
- 0000 UK, BBC London (as): World News. See S 0000.
- 0005 UK, BBC London (as): Waveguide (4). The latest information on international broadcasting with reviews of receivers and news about reception.
- 0005 UK, BBC London (as): Write On. Air your views about World Service; write to PO Box 76, Bush House, Strand, London WC2B 4PH.
- 0030 UK, BBC London (AS): Lives and Times (4th, 11th). See A 0430.
- 0030 UK, BBC London (as): People and Politics. Background to the British political scene.

## THANK YOU...

## ADDITIONAL CONTRIBUTORS TO THIS MONTH'S SHORTWAVE GUIDE:

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## FREQUENCIES

0100-0200	Anguilla, Caribbean Beacon	6090am			
0100-0200 vl	Australia, ABC/Katherine	5025do			
0100-0200 vl	Australia, ABC/Tent Creek	4910do			
0100-0200	Australia, Radio	9660pa	12080va	15240pa	15415as
		17580va	17750as	17795va	21740va
0100-0200	Canada, CBC N Quebec Svc	9625do			
0100-0200	Canada, CFRX Toronto	6070do			
0100-0200	Canada, CFVP Calgary	6030do			
0100-0200	Canada, CHNX Halifax	6130do			
0100-0200	Canada, CKZN St John's	6160do			
0100-0200	Canada, CKZU Vancouver	6160do			
0100-0129	Canada, R Canada Intl	5960na	9535am	9755am	11715am
		13670am			
0100-0156	China, China Radio Intl	9570na			
0100-0200	Costa Rica, RF Peace Intl	6975am	15050am	21460am	
0100-0200	Cuba, Radio Havana	6000na	9820na	11705na	13605na
0100-0127	Czech Rep, R Prague Intl	7345na	11615na		
0100-0200	Ecuador, HCJB	9745na	12015na	21455va	
0100-0145	Germany, Deutsche Welle	6040na	6145na	9640am	11810na
		13720am			
0100-0200 s	Germany, Good News World	9855eu			
0100-0130 m	Germany, V O Deliverance	9855na			
0100-0200 vl	Guatemala, Radio Cultural	3300do			
0100-0200	Guyana, GBC/Voice of	5950do			
0100-0130	Hungary, Radio Budapest	9560na			
0100-0200	Indonesia, Voice of	9525va			
0100-0130	Iran, VOIRI	9022am	9795ca	11970na	
0100-0110	Italy, RAI Intl	9675na	11800na	15240na	
0100-0200	Japan, Radio/NHK	9660me	11860as	11870me	15570as
		15590as	17685pa	17835sa	21670pa
0100-0200	Kenya, Kenya BC Corp	4885do			
0100-0130	Kiribati, Radio	9810do			
0100-0200	Liberia, LCN/R Liberia Int	5100do			
0100-0200	Malaysia, Radio	7295do			
0100-0200 vl	Malaysia, RTM Kota Kinabalu	5980do			
0100-0200	Namibia, NBC	3270af	3289af		
0100-0125	Netherlands, Radio	6165na	9845na		
0100-0200	New Zealand, R NZ Intl	17675va			
0100-0200 vl	Papua New Guinea, NBC	9675do			
0100-0200	Philippines, FEBC R Intl	15450as			
0100-0200	Russia, Voice of Russia WS	7180na	9665na	12050na	15520na
		15595na			
0100-0200	Singapore, R Corp Singapore	6150do			
0100-0130	Slovakia, R Slovakia Intl	5930na	7300ca	9440sa	
0100-0200 vl	Solomon Islands, SIBC	5020do			
0100-0200	Spain, R Exterior Espana	15385na			
0100-0200	Sri Lanka, Sri Lanka BC	6005as	9730as	15425as	
0100-0130	Switzerland, Swiss R Intl	9885am	9905am		
0100-0200	UK, BBC World Service	5970sa	5975am	6175am	6195as
		9410as	9590am	9915sa	11955as
		12095sa	15280as	15310as	15360as
		17790as			
0100-0200	USA, KAIJ Dallas TX	5810na			
0100-0200	USA, KJES Vado NM	7555na			
0100-0200	USA, KTVN Salt Lk City UT	7510na			
0100-0200	USA, KWHR Naalehu HI	17510as			
0100-0200	USA, Voice of America	7115as	7200as	9635as	11705as
		11725as	11820as	15250as	17740as
		17820as			
0100-0130 twfha	USA, Voice of America	5995am	6130am	7405am	9455af
		9775am	13740am		
0100-0200	USA, WBCQ Monticello ME	7415na			
0100-0200	USA, WEWN Birmingham AL	5825na	13615na		
0100-0200	USA, WGTG McCaysville GA	5085am	6890am		
0100-0200	USA, WHRA Greenbush ME	7580na			
0100-0200	USA, WHRI Noblesville IN	5745na	7315na		
0100-0200	USA, WINB Red Lion PA	11950am			
0100-0200	USA, WJCR Upton KY	7490na			
0100-0130 mtwhf	USA, WRMI/R Miami Intl	9955am			
0100-0200	USA, WRNO New Orleans LA	7355na			
0100-0200	USA, WSHB Cypress Crk SC	9430na	15285ca		
0100-0200	USA, WWCR Nashville TN	3215na	5070na	5935na	7435na
0100-0200	USA, WYFR Okeechobee FL	6065na	9505na	15165as	
0100-0130	Uzbekistan, R Tashkent	7190as	9375as	9530as	9715as
0100-0127	Vietnam, Voice of	7250va			
0105-0120	Croatia, Croatian Radio	9925na			
0115-0145 vl	Libya, Voice of Africa	15235va	15415va	15435va	
0129-0200	Canada, R Canada Intl	5960na	9755am		
0129-0200 sm	Canada, R Canada Intl	9535am	11715am	13670am	
0130-0200	Slovakia, AWR Europe	11660as			
0130-0200	Sweden, Radio	13625as			
0130-0200 twfha	USA, Voice of America	5995am	6130am	9455af	
0130-0200 a	USA, WRMI/R Miami Intl	9955am			
0140-0200	Vatican City, Vatican R	9650au	12055au		
0145-0200	Albania, R Tirana Intl	6115na	7160na		

## SELECTED PROGRAMS

## Sundays

- 0100 China, China Radio Intl: News. A ten-minute summary of world news.
- 0100 Japan, NHK/Radio: News. See S 0000.
- 0110 China, China Radio Intl: News about China. Ten minutes of home news.
- 0110 Japan, NHK/Radio: Hello from Tokyo. The weekend magazine program with letters from listeners and short features.
- 0115 China, China Radio Intl: Asia-Pacific News. Five minutes of regional news.
- 0120 China, China Radio Intl: Report on Developing Countries. A report on projects in the Third World.
- 0130 China, China Radio Intl: China Scrapbook. Snippets of facts about China's past and present.
- 0135 China, China Radio Intl: Music from China. Chinese music from traditional to pop to annual music festivals.

## Mondays

- 0100 China, China Radio Intl: News. See S 0100.
- 0100 Japan, NHK/Radio: News. See S 0000.
- 0110 China, China Radio Intl: News about China. See S 0110.
- 0110 Japan, NHK/Radio: Hello from Tokyo. See S 0110.
- 0113 China, China Radio Intl: Sports Beat. See S 1213.
- 0120 China, China Radio Intl: People in the Know. See S 1220.
- 0125 China, China Radio Intl: Report on Developing Countries. See S 0120.
- 0135 China, China Radio Intl: Song of the Week. See S 1235.
- 0145 China, China Radio Intl: Voices from Other Lands. See S 1245.

## Tuesday-Saturday

- 0100 China, China Radio Intl: News. See S 0100.
- 0100 Japan, NHK/Radio: News. See S 0000.
- 0110 China, China Radio Intl: News about China. See S 0110.
- 0115 Japan, NHK/Radio: 44 Minutes. See M 0515.
- 0117 Japan, NHK/Radio: Interview Corner. See M 0517.
- 0120 China, China Radio Intl: Current Affairs. See M 1220.
- 0125 China, China Radio Intl: Press Clippings. See M 1225.
- 0130 China, China Radio Intl: China's Open Windows. See M 1230.
- 0131 Japan, NHK/Radio: Close Up. See M 0534.
- 0148 Japan, NHK/Radio: News Commentary. See M 0547.

## Tuesdays

- 0134 China, China Radio Intl: Changzhou Reports. See M 1234.
- 0145 China, China Radio Intl: Idioms and Their Stories. See M 1245.
- 0152 Japan, NHK/Radio: Tumbling Dice. See M 0552.

## Wednesdays

- 0139 China, China Radio Intl: Orient Arena. See T 1239.
- 0145 China, China Radio Intl: Voices from Other Lands. See S 1245.
- 0152 Japan, NHK/Radio: Tumbling Dice. See M 0552.

## Thursdays

- 0138 China, China Radio Intl: Profile. See W 1238.
- 0145 China, China Radio Intl: Learn to Speak Chinese. See W 1245.
- 0152 Japan, NHK/Radio: Tumbling Dice. See M 0552.

## Fridays

- 0135 China, China Radio Intl: Across the Land. See H 1235.
- 0140 China, China Radio Intl: Focus. See H 1240.
- 0144 China, China Radio Intl: Cultural Spectrum. See H 1244.

## Saturdays

- 0135 China, China Radio Intl: Changzhou Reports. See M 1234.
- 0139 China, China Radio Intl: Life in China. See F 1239.
- 0145 China, China Radio Intl: Global Review. See F 1245.
- 0152 Japan, NHK/Radio: Tumbling Dice. See M 0552.

## HAUSEK'S HIGHLIGHTS

## BELARUS: R. BELARUS INT'L, A.K.A. R. MINSK

English to Europe, some of which may be paid religion:

0200-0230 Sun/Mon/Wed/Fri/Sat 7210, 11670  
1930-2000 Tue/Thu 7210, 11960  
2030-2100 Tue/Thu 7210, 11960  
(BBC Monitoring)

## FREQUENCIES

0200-0300	Anguilla, Caribbean Beacon	6090am				0200-0300	South Korea, R Korea Intl	7275as	11725sa	11810sa	15575na
0200-0300 twhfa	Argentina, RAE	11710am				0200-0300	Sri Lanka, Sri Lanka BC	6005as	9730as	15425as	
0200-0300 vl	Australia, ABC/Katherine	5025do				0200-0300	Taiwan, Radio Taipei Intl	5950na	9680na	11740na	11745va
0200-0300 vl	Australia, ABC/Tent Creek	4910do						11825pa	15345as		
0200-0300	Australia, Radio	9660pa	12080va	15240pa	15415as	0200-0300	UK, BBC World Service	5970sa	5975am	6175am	6185am
		15515va	17580va	17750as	21725pa			6195eu	9410me	9770af	9915sa
								11955as	15280as	15310as	15360as
								17790as			
0200-0210	Bangladesh, Bangla Betar	4880as				0200-0300	USA, KAIJ Dallas TX	5810na			
0200-0230 smwfa	Belarus, R Minsk	7210eu	11670eu			0200-0230	USA, KJES Vado NM	7555na			
0200-0300	Bulgaria, Radio	9400na	11700na			0200-0300	USA, KTVN Salt Lk City UT	7510na			
0200-0300	Canada, CBC N Quebec Svc	9625do				0200-0300 vl	USA, KVOH Los Angeles CA	9975am			
0200-0300	Canada, CFRX Toronto	6070do				0200-0300	USA, KWHR Naalehu HI	17510as			
0200-0300	Canada, CFVP Calgary	6030do				0200-0300	USA, Voice of America	4960af	7115as	7200as	9635as
0200-0300	Canada, CHNX Halifax	6130do						11705as	11725as	11820as	15250as
0200-0300	Canada, CKZN St John's	6160do						17740as			
0200-0300	Canada, CKZU Vancouver	6160do				0200-0300	USA, WBCQ Monticello ME	7415na			
0200-0229	Canada, R Canada Intl	9535am	9755am	11715am	13670am	0200-0300	USA, WEWN Birmingham AL	5825va			
0200-0300	Costa Rica, RF Peace Intl	6975am	15050am	21460am		0200-0300	USA, WGTG McCaysville GA	5085am	6890am		
0200-0205 vl	Croatia, Croatian Radio	9925na				0200-0300	USA, WHRA Greenbush ME	7580na			
0200-0300	Cuba, Radio Havana	6000na	9820na	11705na	13605na	0200-0300	USA, WHRI Noblesville IN	5745na	7315sa		
0200-0300	Ecuador, HCJB	9745na	12015na	21455va		0200-0300	USA, WINB Red Lion PA	11950am			
0200-0300	Egypt, Radio Cairo	9475na				0200-0300	USA, WJCR Upton KY	7490na			
0200-0245	Germany, Deutsche Welle	9615as	9690as	11945as	11965as	0200-0300	USA, WRNO New Orleans LA	7355na			
		13690as	15560as			0200-0300 vl	USA, WSHB Cypress Crk SC	7535na	9430na		
0200-0300	Germany, Overcomer Ministr	9860na				0200-0300	USA, WWCR Nashville TN	3215na	5070na	5935na	7435na
0200-0300	Guyana, GBC/Voice of	5950do				0200-0300	USA, WYFR Okeechobee FL	6065na	9505na		
0200-0300 irreg	Iraq, Radio Iraq Intl	11785am				0210-0215 thfa/vl	Kyrgyzstan, Kyrgyz Radio	4010do	4050do		
0200-0300	Kenya, Kenya BC Corp	4935do				0215-0220	Nepal, Radio	5005as	7165as		
0200-0300	Malaysia, Radio	7295do				0229-0300 sm	Canada, R Canada Intl	9535am	9755am	11715am	13670am
0200-0230	Myanmar, Radio	7185do				0230-0300	Albania, R Tirana Intl	6115na	7160na		
0200-0300	Namibia, NBC	3270af	3289af			0230-0300	Austria, R Austria Intl	9655na	9870ca		
0200-0300	New Zealand, R NZ Intl	17675va				0230-0300	Hungary, Radio Budapest	9840na			
0200-0300 vl	Papua New Guinea, NBC	9675do				0230-0245	Pakistan, Radio	9640as	11930as	15455as	15485as
0200-0256	Romania, R Romania Intl	9510na	9570na	11725au	11740na			17660as	17895as		
		11810as	17735as			0230-0300 vl	Philippines, R Pilipinas	11885as	15120as	15270as	
0200-0300	Russia, Voice of Russia WS	7180na	9665na	12020na	15520na	0230-0300	Sweden, Radio	9495na			
		15595na				0230-0257	Vietnam, Voice of	7250va			
0200-0300 vl	Singapore, R Corp Singapore	6150do				0250-0300	Vatican City, Vatican R	7305am	9605am		
0200-0300 vl	Solomon Islands, SIBC	5020do									

## SELECTED PROGRAMS

## Sundays

- 0200 Taiwan, Radio Taipei Intl: News. Twelve minutes of world news.
- 0200 South Korea, R Korea Intl: News. Seven or ten minutes of world and regional news.
- 0210 South Korea, R Korea Intl: News Commentary. Opinion on developments in Korea and worldwide.
- 0215 Taiwan, Radio Taipei Intl: Great Wall Forum. Comparing Taiwan with the mainland.
- 0215 South Korea, R Korea Intl: Music Trap. The most popular music of South Korea.
- 0230 Taiwan, Radio Taipei Intl: Food, Poetry and Others. The program in which host Paula Chao talks about her personal interests.
- 0240 South Korea, R Korea Intl: From Us to You. Listener letters, questions, comments, Q&A Corner and Music Request.
- 0245 Taiwan, Radio Taipei Intl: Mailbag Time. Host Carlton Wong reads letters from listeners and plays music requests.

## Mondays

- 0200 Taiwan, Radio Taipei Intl: News. See S 0200.
- 0200 South Korea, R Korea Intl: News. See S 0200.
- 0210 South Korea, R Korea Intl: Echoes of Korean Music. A weekly selection of Korean music and the story behind it.
- 0215 Taiwan, Radio Taipei Intl: Jade Bells and Bamboo Pipes. Carlton Wong plays Chinese folk and temple music.
- 0230 South Korea, R Korea Intl: Multiwave Feedback. A listener-contact show with alternating DX Report and Technical Corner.
- 0245 Taiwan, Radio Taipei Intl: Let's Learn Chinese. See S 0345.

## Tuesday-Saturday

- 0200 Taiwan, Radio Taipei Intl: News. See S 0200.
- 0200 South Korea, R Korea Intl: News. See S 0200.
- 0210 South Korea, R Korea Intl: News Commentary. See S 0210.
- 0245 Taiwan, Radio Taipei Intl: Let's Learn Chinese. See S 0345.

## Tuesdays

- 0215 Taiwan, Radio Taipei Intl: People. An introduction to people from all walks of life in Taiwan.
- 0215 South Korea, R Korea Intl: Seoul Calling. A magazine program of features and short interviews with pop songs in between.
- 0230 Taiwan, Radio Taipei Intl: Trends. Amanda with weekly sound bites about what's new and happening in Taipei.
- 0237 South Korea, R Korea Intl: Economic News Briefs. Five minutes of financial news and import/export information.
- 0242 South Korea, R Korea Intl: Notes of Nostalgia. Discover the rich heritage of music that is distinctly Korean and the people who created it.

## Wednesdays

- 0215 Taiwan, Radio Taipei Intl: Music Box. Featuring some of the popular artists of Taiwan and their music.
- 0215 South Korea, R Korea Intl: Seoul Calling. See T 0215.
- 0240 South Korea, R Korea Intl: Economic News Briefs. See T 0237.
- 0245 South Korea, R Korea Intl: Cultural Promenade. A look at Korean cultural and artistic traditions and highlights of activities taking place in Korea.
- 0247 Taiwan, Radio Taipei Intl: Let's Learn Chinese. See S 0345.

## Thursdays

- 0215 Taiwan, Radio Taipei Intl: Journey into Chinese Culture. Conversation about a particular cultural activity in Taiwan.

- 0215 South Korea, R Korea Intl: Seoul Calling. See T 0215.
- 0234 Taiwan, Radio Taipei Intl: Hot Spots. A look at the Taiwan music scene.
- 0237 South Korea, R Korea Intl: Economic News Briefs. See T 0237.
- 0241 South Korea, R Korea Intl: Reaching Forward. A look at South Korea's advancements in technology and how it is coping with the financial crisis.

## Fridays

- 0215 Taiwan, Radio Taipei Intl: Taipei Magazine. Life in Taiwan.
- 0215 South Korea, R Korea Intl: Seoul Calling. See T 0215.
- 0230 Taiwan, Radio Taipei Intl: Life on the Outside. Discovering everyday life and customs in Taiwan.
- 0240 South Korea, R Korea Intl: Economic News Briefs. See T 0237.
- 0245 South Korea, R Korea Intl: Tales from Korea's Past. The history of Korea.

## Saturdays

- 0215 Taiwan, Radio Taipei Intl: Kaleidoscope. See S 0315.
- 0215 South Korea, R Korea Intl: Sites and Sounds. A look at Korea's tourist attractions and industry.
- 0230 Taiwan, Radio Taipei Intl: Reflections. See S 0330.
- 0236 South Korea, R Korea Intl: Globalizing Korea. How today's ordinary Koreans from different walks of life deal and cope with their lives.
- 0245 South Korea, R Korea Intl: Let's Learn Korean!. Korean language lessons for native English speakers.



## SELECTED PROGRAMS

## Sundays

0300 China, China Radio Intl: News. See S 0100.  
0300 Japan, NHK/Radio: News. See S 0000.  
0300 Taiwan, Radio Taipei Intl: News. See S 0200.  
0310 China, China Radio Intl: News about China. See S 0110.  
0310 Japan, NHK/Radio: Hello from Tokyo. See S 0110.  
0315 China, China Radio Intl: Asia-Pacific News. See S 0115.  
0315 Taiwan, Radio Taipei Intl: Kaleidoscope. Spotlight on life in Taiwan.  
0320 China, China Radio Intl: Report on Developing Countries. See S 0120.  
0330 China, China Radio Intl: China Scrapbook. See S 0130.  
0330 Taiwan, Radio Taipei Intl: Reflections. The best of Chinese literature.  
0335 China, China Radio Intl: Music from China. See S 0135.  
0345 Taiwan, Radio Taipei Intl: Let's Learn Chinese. Chinese lessons with commentary and translation in English.

## Mondays

0300 China, China Radio Intl: News. See S 0100.  
0300 Japan, NHK/Radio: News. See S 0000.  
0300 Taiwan, Radio Taipei Intl: News. See S 0200.  
0310 China, China Radio Intl: News about China. See S 0110.  
0313 China, China Radio Intl: Sports Beat. See S 1213.  
0315 Japan, NHK/Radio: Asian Top News. See S 1411.  
0315 Taiwan, Radio Taipei Intl: Food, Poetry and Others. See S 0230.  
0320 China, China Radio Intl: People in the Know. See S 1220.  
0320 UK, BBC London (AS): Matter for Debate (repeat). See S 1405.

0325 China, China Radio Intl: Report on Developing Countries. See S 0120.

0325 Japan, NHK/Radio: Music Reflections. Music from around the world which shares a common theme (35 min).

0330 Taiwan, Radio Taipei Intl: Mailbag Time. See S 0245.

0335 China, China Radio Intl: Song of the Week. See S 1235.

0345 China, China Radio Intl: Voices from Other Lands. See S 1245.

0345 Taiwan, Radio Taipei Intl: Let's Learn Chinese. See S 0345.

**Tuesday-Saturday**

0300 China, China Radio Intl: News. See S 0100.  
0300 Japan, NHK/Radio: News. See S 0000.  
0300 Taiwan, Radio Taipei Intl: News. See S 0200.  
0310 China, China Radio Intl: News about China. See S 0110.  
0315 Japan, NHK/Radio: Asian Top News. See S 1411.  
0320 China, China Radio Intl: Current Affairs. See M 1220.  
0325 China, China Radio Intl: Press Clippings. See M 1225.  
0345 Taiwan, Radio Taipei Intl: Let's Learn Chinese. See S 0345.

## Tuesdays

0315 Taiwan, Radio Taipei Intl: Jade Bells and Bamboo Pipes. See M 0215.

0325 Japan, NHK/Radio: Enjoy Japanese. Learn and practice the Japanese language.

0330 China, China Radio Intl: China's Open Windows. See M 1230.

0334 China, China Radio Intl: Changzhou Reports. See M 1234.

0345 China, China Radio Intl: Idioms and Their Stories. See M 1245.

## Wednesdays

0315 Taiwan. Radio Taipei Intl: People. See T 0215.

0325 Japan, NHK/Radio: Music Reflections. See M 0325.  
0330 Taiwan, Radio Taipei Intl: Trends. See T 0230.  
0339 China, China Radio Intl: Orient Arena. See T 1239.  
0345 China, China Radio Intl: Voices from Other Lands. See S 1245.

## Thursdays

0315 Taiwan, Radio Taipei Intl: Taiwan Today. See T 1215.  
0325 Japan, NHK/Radio: My Japan Diary. A new version of the old Japan Diary program.  
0330 Taiwan, Radio Taipei Intl: Miss Mook's Big Countdown. See W 1215.  
0338 China, China Radio Intl: Profile. See W 1238.  
0345 China, China Radio Intl: Learn to Speak Chinese. See W 1245.

## Fridays

0315 Taiwan, Radio Taipei Intl: Jade Bells and Bamboo Pipes.  
See M 0215.

0320 China, China Radio Intl: Current Affairs. See M 1220.

0325 Japan, NHK/Radio: Music Beat. The top ten countdown  
of popular Japanese music.

0335 China, China Radio Intl: Across the Land. See H 1235.

0340 China, China Radio Intl: Focus. See H 1240.

0344 China, China Radio Intl: Cultural Spectrum. See H 1244.

### Saturdays

0310 Japan, NHK/Radio: Weekend Break. See S 0510.  
0315 Taiwan, Radio Taipei Intl: Taipei Magazine. See F 0215.  
0330 UK, BBC London (AF): Lives and Times (4th,11th). See A 0430.  
0335 China, China Radio Intl: Changzhou Reports. See M 1234.  
0335 Taiwan, Radio Taipei Intl: Life on the Outside. See F 0230.  
0339 China, China Radio Intl: Life in China. See F 1239.  
0345 China, China Radio Intl: Global Review. See F 1245.







0500-0600	Anguilla, Caribbean Beacon	6090am				0500-0600 vl	Solomon Islands, SIBC	5020do			
0500-0600 vl	Australia, ABC/Katherine	5025do				0500-0556	Spain, R Exterior Espana	6055na			
0500-0600 vl	Australia, ABC/Tent Creek	4910do				0500-0505	Swaziland, Trans World R	3200af	4775af		
0500-0600	Australia, Radio	9660pa	12080va	15240pa	15515va	0500-0600	Uganda, Radio	4976do			
		17580va	21725pa			0500-0600	UK, BBC World Service	3255af	3955eu	5975am	6005af
0500-0600 as	Australia, Radio	17750as						6175am	6180eu	6190af	6195eu
0500-0600 vl	Botswana, Radio	4820do	7255do					7160af	9410eu	9740as	11760me
0500-0600	Canada, CBC N Quebec Svc	9625do						11765af	11955pa	12095pa	15280as
0500-0600	Canada, CFRX Toronto	6070do						15310as	15360as	15420af	15575as
0500-0600	Canada, CFVP Calgary	6030do						17640af	17760as	17790as	17885af
0500-0600	Canada, CHNX Halifax	6130do						21660as			
0500-0600	Canada, CKZN St John's	6160do				0500-0600	USA, KAIJ Dallas TX	5810na			
0500-0600	Canada, CKZU Vancouver	6160do				0500-0600	USA, KTBN Salt Lk City UT	7510na			
0500-0529	Canada, R Canada Intl	5995na	6145eu	7295eu	9595eu	0500-0600	USA, KWHR Naalehu HI	17780as			
		9755na	11710eu	11830na	13755eu	0500-0600	USA, Voice of America	5970af	6035af	6080af	7170af
		15330eu	15400eu					7195af	9630af	11965me	12080af
		6975am	15050am					15205va			
0500-0600	Costa Rica, RF Peace Intl	6975am						7415na			
0500-0600	Cuba, Radio Havana	9550na	9820na	9830na		0500-0600	USA, WBCQ Monticello ME	5825va			
0500-0600	Ecuador, HCJB	9745na	12015na	21455va		0500-0600	USA, WEVN Birmingham AL	5085am	6890am		
0500-0545	Germany, Deutsche Welle	9615am	9670na	11795na	11810na	0500-0600	USA, WGTG McCaysville GA	51565af			
0500-0600	Guyana, GBC/Voice of	5950do				0500-0600	USA, WHRA Greenbush ME	5745na	7315sa		
0500-0600 as/vl	Italy, IRRS	3985va				0500-0600	USA, WHRI Noblesville IN	11950am			
0500-0600	Japan, Radio/NHK	6110na	7230eu	11715as	11760as	0500-0600	USA, WINB Red Lion PA	7490na			
		11840as	11850pa	15230pa	15590as	0500-0600	USA, WJCR Upton KY	7395na			
		17825na				0500-0600	USA, WRNO New Orleans LA	9840af	11930eu		
0500-0600	Kenya, Kenya BC Corp	4885do	4935do			0500-0600 vl	USA, WSHB Cypress Crk SC	2390na	3210na	5070na	5935na
0500-0600 vl	Lesotho, Radio	4800do				0500-0600	USA, WWCN Nashville TN	5985na	9985eu	11580eu	
0500-0600	Liberia, LCN/R Liberia Int	5100do				0500-0600	USA, WYFR Okeechobee FL	4005eu	5883eu	7250eu	9660af
0500-0510 vl/m-f	Malawi, MBC	5993do				0500-0520	Vatican City, Vatican R	11625af	15570af		
0500-0600	Malaysia, Radio	7295do						6065do			
0500-0600	Malaysia, RTM Sarawak	7160do				0500-0600	Zambia, Christian Voice	6165do	6265do		
0500-0600	Malaysia, Voice of	6175as	9750as	15295as		0500-0530 vl	Zimbabwe, Zimbabwe BC	3306do	4828do		
0500-0525	Netherlands, Radio	6165na	9590na			0505-0518	Croatia, Croatian Radio	9470va	13820au		
0500-0600	New Zealand, R NZ Intl	11905va				0505-0600 mtwhf	Swaziland, Trans World R	4775af	6100af	9500af	
0500-0600 vl	Nigeria, Radio/Ibadan	6050do				0520-0530	Vatican City, Vatican R	9660af	11625af	15570af	
0500-0600 vl	Nigeria, Radio/Kaduna	4770do				0525-0600	Ghana, Ghana BC Corp	3366do	4915do		
0500-0600	Nigeria, Radio/Lagos	3326do				0530-0600	Austria, R Austria Intl	6015na			
0500-0600	Nigeria, Voice of	7255af	15120va			0530-0600	Georgia, Georgian Radio	11805eu			
0500-0600	North Korea, R Pyongyang	11710eu	13790as			0530-0600	Kiribati, Radio	9810do			
0500-0504	Pakistan, Radio	9645do				0530-0600 mtwhfa	Malta, VO Mediterranean	7155eu			
0500-0600 vl	Papua New Guinea, NBC	9675do				0530-0600	Switzerland, Swiss R Intl	13635eu			
0500-0600	Russia, Voice of Russia WS	17625au	21790au			0530-0600	Thailand, Radio	9655eu	11905eu	15445eu	
0500-0530	S Africa, AWR Africa	5960af				0530-0600	UAE, Radio Dubai	15435au	17830au	21605au	21700au
0500-0530	S Africa, Channel Africa	11720af				0530-0600 vl	Zimbabwe, Zimbabwe BC	4828do	5012do		
0500-0600	Singapore, RCorn Sinoapore	6150do									

## SELECTED PROGRAMS

0500 UK, BBC London (as): The World Today. See S 0000.  
0500 Japan, NHK/Radio: News. See S 0000.  
0510 Japan, NHK/Radio: Weekend Break. A magazine  
program featuring stories from around Japan.  
0530 UK, BBC London (as): Westway Compilation Edition.  
Catch up on the week's episodes of the World  
Service's drama serial.

0500	UK, BBC London (as): The World Today. See S 0000.
0500	Japan, NHK/Radio: News. See S 0000.
0515	Japan, NHK/Radio: 44 Minutes. The weekday magazine program of feature reports and the popular vocal music of Japan.
0517	Japan, NHK/Radio: Interview Corner. The first segment of the magazine program "44 Minutes" features a conversation with a visitor.
0530	UK, BBC London (as): The Vintage Chart Show. Each week a classic Top 20 from the past with Paul Burnett.
0534	Japan, NHK/Radio: Close Up. Featuring a Japanese person of note.
0547	Japan, NHK/Radio: News Commentary. An editorial opinion on the current news.
0552	Japan, NHK/Radio: Tumbling Dice. Focus on a topic of interest in Japan.

0500 UK, BBC London (as): The World Today. See S 0000.  
0500 Japan, NHK/Radio: News. See S 0000.

0515 Japan, NHK/Radio: 44 Minutes. See M 0515.  
0517 Japan, NHK/Radio: Interview Corner. See M 0517.  
0534 Japan, NHK/Radio: Close Up. See M 0534.  
0547 Japan, NHK/Radio: News Commentary. See M 0547.

0530 UK, BBC London (as): The UK Top Twenty. Tim Smith presents the UK's pop countdown.

0552 Japan, NHK/Radio: Tumbling Dice. See M 0552.

0530 UK, BBC London (as): Andy Kershaw's World of Music. Recordings of diverse music from around the world.

0552 Japan, NHK/Radio: Tumbling Dice. See M 0552.

0530 UK, BBC London (as): Blues World. Tony Russell returns with a new series about the blues.

0552 Japan, NHK/Radio: Tumbling Dice. See M 0552.

0530 UK, BBC London (as): Jazzmatazz. The request program that lives up to its title.

0552 Japan, NHK/Radio: Tumbling Dice. See M 0552.

0505 UK, BBC London (as): The Edge (hour 2) (SAs). The second hour of a two-hour show of music, chat and humor, aimed at younger listeners.

0510 Japan, NHK/Radio: Hello from Tokyo. See S 0110.  
0530 UK, BBC London (as): Variable Feature. See S 0601.

6130 is sounding rather unwell with very shallow and muffled audio at 2200-0730, 0925-1500. This frequency is used as the feed for 25-30 minute news bulletins from Vientiane to provincial stations at 0000, 0500 and 1200. Regionals continue with local programs (usually Lao music) when reception on 6130 is poor or non-existent.

Luang Prabang has returned to shortwave, varying around 6970.5-6972 at approximately 2200-0700 and 1025-1400. Sam Neua, Houa Phan Province, has moved to 4641v (x-4653v), approximately 2300-0130, 1015-1230. Nothing to be heard from Pakse on shortwave.  
(Alan Davies, Laos. *Electronic DX Press*)

## FREQUENCIES

0600-0700	Anguilla, Caribbean Beacon	6090am			
0600-0700 vl	Australia, ABC/Katherine	5025do			
0600-0700 vl	Australia, ABC/Tent Creek	4910do			
0600-0700	Australia, Radio	9660pa	12080va	15240pa	15415as
		15515va	17580va	17750as	21725pa
		4820do	4830do	7255do	
0600-0700 vl	Botswana, Radio	9625do			
0600-0700 vl	Canada, CBC N Quebec Svc	6070do			
0600-0700	Canada, CFRX Toronto	6030do			
0600-0700	Canada, CFVP Calgary	6130do			
0600-0700	Canada, CHNX Halifax	6160do			
0600-0700	Canada, CKZN St John's	6160do			
0600-0700	Canada, CKZU Vancouver	6975am	15050am		
0600-0700	Costa Rica, RF Peace Intl	9470va	13820au		
0600-0605	Croatia, Croatian Radio	9550na	9820na	9830na	
0600-0700	Cuba, Radio Havana	9745na	12015na	21455va	
0600-0700	Ecuador, HCJB	6140eu	11915af	13790af	15185af
0600-0645	Germany, Deutsche Welle	17820as	17860af	21680me	
		13810au			
0600-0700	Germany, Overcomer Minist	3366do	4915do		
0600-0630	Ghana, Ghana BC Corp	5950do			
0600-0700	Guyana, GBC/Voice of	3985va			
0600-0630 vl	Italy, IRRS	5975eu	7230eu	11740as	11840as
0600-0700	Japan, Radio/NHK	11850pa	17825na		
		4885do	4935do		
0600-0700	Kenya, Kenya BC Corp	9810do			
0600-0700	Kiribati, Radio	4800do			
0600-0700 vl	Lesotho, Radio	5100do			
0600-0700	Liberia, LCN/R Liberia Int	7295do			
0600-0700	Malaysia, Radio	7160do			
0600-0700	Malaysia, RTM Sarawak	6175as	9750as	15295as	
0600-0700	Malaysia, Voice of	7165af			
0600-0700	Namibia, NBC	11905va			
0600-0700	New Zealand, R NZ Intl	6050do			
0600-0700 vl	Nigeria, Radio/Ibadan	4770do			
0600-0700 vl	Nigeria, Radio/Kaduna	3326do			
0600-0700	Nigeria, Radio/Lagos	7255af	15120va		
0600-0700 vl	Nigeria, Voice of	9675do			
0600-0700 vl	Papua New Guinea, NBC	11725na	11940na		
0600-0641	Romania, R Romania Intl	15490au	17625au	17655as	21790au
0600-0700	Russia, Voice of Russia WS	15215af			
0600-0630	S Africa, Channel Africa	3316do			
0600-0700	Sierra Leone, SLBS	6150do			
0600-0700	Singapore, R Corp Singapore	5020do			
0600-0700 vl	Solomon Islands, SIBC	4775af	6100af	9500af	
0600-0700 mtwhf	Swaziland, Trans World R				
0600-0700	UK, BBC World Service	5975am	6005af	6175am	6190af
		6195eu	7145pa	7160af	9410eu
		9740as	11760me	11765af	11940af
		11955pa	12095eu	15310as	15360as
		15400af	15420af	15565eu	15575as
		17640af	17760as	17790as	17885af
		21660as			
0600-0700	USA, KAIJ Dallas TX	5810na			
0600-0700	USA, KTBN Salt Lk City UT	7510na			
0600-0700	USA, KWHR Naalehu HI	17780as			
0600-0630	USA, Voice of America	5970af	6035af	6080af	7170va
		7195af	9630af	9680af	11805af
		11965me	11995af	12080af	15205va
		7415na			
0600-0700	USA, WBCQ Monticello ME	5825va			
0600-0700	USA, WEWN Birmingham AL	11565af			
0600-0700	USA, WHRA Greenbush ME	5745na	7315sa		
0600-0700	USA, WHRI Noblesville IN	11950am			
0600-0700	USA, WINB Red Lion PA	7490na			
0600-0700	USA, WJCR Upton KY	7395na			
0600-0700 vl	USA, WRNO New Orleans LA	13650af			
0600-0700	USA, WWSB Cypress Crk SC	2390na	3210na	5070na	5935na
0600-0700	USA, WWCR Nashville TN	5985na	7355eu		
0600-0700	USA, WYFR Okeechobee FL	4960do			
0600-0700 vl	Vanuatu, Radio	9780do			
0600-0700	Yemen, Rep of Yemen Radio	9865do			
0600-0700	Zambia, Christian Voice	6165do	6265do		
0600-0700	Zambia, Natl BC Corp	4828do	5012do		
0600-0700 vl	Zimbabwe, Zimbabwe BC	5945eu	7365eu	9830eu	
0605-0610 mtwhfa	Croatia, Croatian Radio	4010do	4050do		
0610-0615 s	Kyrgyzstan, Kyrgyz Radio	6015na			
0630-0700	Austria, R Austria Intl	15250as	21670au		
0630-0700	Finland, YLE/R Finland	6080me			
0630-0700 t h	Georgia, Georgian Radio	7120va			
0630-0700 as	Italy, IRRS	17885af			
0630-0700 as	UK, BBC World Service	7170af	9680af	11805af	11965me
0630-0700	USA, Voice of America	15205va			
		5970af	6035af	6080af	7195af
0630-0700 as	USA, Voice of America	9630af	11995af	12080af	
		11625va	13765af	15570af	
0630-0645	Vatican City, Vatican R	4005eu	5883eu	7250eu	9645eu
0630-0645 mtwhfa	Vatican City, Vatican R	11740eu	15595eu		
		9625eu	11725na	11775eu	11840eu
0641-0700	Romania, R Romania Intl	11885eu	11940na	15270eu	
		6140eu			
0645-0700	Germany, Deutsche Welle	6045eu	9870eu		
0645-0655 as	Monaco, Trans World Radio	11625va	13795af	15570af	
0645-0700	Vatican City, Vatican R	6045eu	9870eu		
0655-0700 mtwhf	Monaco, Trans World Radio				

## SELECTED PROGRAMS

## Sundays

- 0600 Japan, NHK/Radio: News. See S 0000.  
0600 Malaysia, Voice of: Voice of Islam.  
0600 UK, BBC London (as): News Summary. One minute news update.  
0601 UK, BBC London (as): Variable Feature. Special features and new series.  
0610 Japan, NHK/Radio: Hello from Tokyo. See S 0110.

## Mondays

- 0600 UK, BBC London (as): World News. See S 0000.  
0600 Japan, NHK/Radio: News. See S 0000.  
0600 Malaysia, Voice of: Voice of Islam.  
0615 Japan, NHK/Radio: Asian Top News. See S 1411.  
0615 UK, BBC London (AE): Matter for Debate (repeat). See S 1405.  
0615 UK, BBC London (as): My Century. Moments from individuals' lives throughout the 20th century (5 or 30 mins).  
0625 Japan, NHK/Radio: Music Reflections. See M 0325.  
0630 UK, BBC London (as): Health Matters. See M 0005.

## Tuesday-Saturday

- 0600 UK, BBC London (as): World News. See S 0000.  
0600 Japan, NHK/Radio: News. See S 0000.  
0600 Malaysia, Voice of: Voice of Islam.

## Tuesdays

- 0615 UK, BBC London (as): My Century. See M 0615.

- 0615 Japan, NHK/Radio: Asian Top News. See S 1411.  
0620 UK, BBC London (as): Off the Shelf. Daily readings from the best of world literature.  
0625 Japan, NHK/Radio: Enjoy Japanese. See T 0325.  
0635 UK, BBC London (as): Discovery. See T 0005.

## Wednesdays

- 0615 Japan, NHK/Radio: Asian Top News. See S 1411.  
0615 UK, BBC London (as): My Century. See M 0615.  
0620 UK, BBC London (as): Off the Shelf. See T 0620.  
0625 Japan, NHK/Radio: Music Reflections. See M 0325.

## Thursdays

- 0615 Japan, NHK/Radio: Asian Top News. See S 1411.  
0615 UK, BBC London (as): My Century. See M 0615.  
0620 UK, BBC London (as): Off the Shelf. See T 0620.  
0625 Japan, NHK/Radio: My Japan Diary. See H 0325.

## Fridays

- 0615 Japan, NHK/Radio: Asian Top News. See S 1411.  
0615 UK, BBC London (as): My Century. See M 0615.  
0620 UK, BBC London (as): Off the Shelf. See T 0620.  
0625 Japan, NHK/Radio: Music Beat. See F 0325.  
0625 UK, BBC London (as): Take Five. A short series of human interest stories.  
0635 UK, BBC London (as): Multitrack Alternative. Latest developments on the British music scene.

## Saturdays

- 0600 Japan, NHK/Radio: News. See S 0000.  
0600 Malaysia, Voice of: Voice of Islam.  
0610 Japan, NHK/Radio: Asia Weekly. See S 0010.  
0615 UK, BBC London (as): Spotlight. Focus on the theater.  
0620 UK, BBC London (as): Omnibus. See M 0030.



*A bit of QSL nostalgia,  
courtesy Gerald Gentry,  
Va Beach, VA*



## FREQUENCIES

0700-0800	Anguilla,Caribbean Beacon	6090am				0800-0900	Anguilla,Caribbean Beacon	6090am				
0700-0800 vl	Australia, ABC/Katherine	5025do				0800-0830 vl	Australia, ABC/Katherine	5025do				
0700-0800 vl	Australia, ABC/Tent Creek	4910do				0800-0830 vl	Australia, ABC/Tent Creek	4910do				
0700-0800	Australia, Radio	9660pa	12080va	15240pa	15415as	0800-0900	Australia, Radio	5995pa	9710pa	11650va	12080va	
		15515va	17580va	17750as	21725pa			13605va	15515va	21725pa		
0700-0726	Belgium,R Vlaanderen Intl	9925eu				0800-0900 vl	Botswana, Radio	4820do				
0700-0800 vl	Botswana, Radio	4820do	4830do	7255do		0800-0900 vl	Canada, CBC N Quebec Svc	9625do				
0700-0800	Canada, CFRX Toronto	6070do				0800-0900	Canada, CFRX Toronto	6070do				
0700-0800	Canada, CFVP Calgary	6030do				0800-0900	Canada, CFVP Calgary	6030do				
0700-0800	Canada, CHNX Halifax	6130do				0800-0900	Canada, CHNX Halifax	6130do				
0700-0800	Canada, CKZN St John's	6160do				0800-0900	Canada, CKZN St John's	6160do				
0700-0800	Canada, CKZU Vancouver	6160do				0800-0900	Canada, CKZU Vancouver	6160do				
0700-0800	Costa Rica,RF Peace Intl	6975am				0800-0900	Costa Rica,RF Peace Intl	6975am				
0700-0705	Croatia, Croatian Radio	9470va	13820af			0800-0805	Croatia, Croatian Radio	13820au				
0700-0727	Czech Rep, R Prague Intl	9880eu	11600eu			0800-0900	Ecuador, HCJB	11730eu	15115pa	21455va		
0700-0800	Ecuador, HCJB	11730eu	15115pa	21455va		0800-0900	Eqt Guinea, Radio Africa	15186af				
0700-0800	Eqt Guinea, Radio Africa	15186af				0800-0900	Germany, Deutsche Welle	6140eu				
0700-0800	Germany, Deutsche Welle	6140eu				0800-0900	Germany, Voice of Hope	5975eu				
0700-0800 s	Germany, Good News World	13740as				0800-0900	Germany,Overcomer Ministr	13810au				
0700-0800	Germany, Voice of Hope	5975eu				0800-0805	Ghana, Ghana BC Corp	4915do				
0700-0800	Germany,Overcomer Ministr	13810au				0800-0900	Guam, TWR/KTWR	15200as	15330as			
0700-0715	Ghana, Ghana BC Corp	3366do	4915do			0800-0900	Guyana, GBC/Voice of	5950do				
0700-0800	Guyana, GBC/Voice of	5950do				0800-0900	Indonesia, Voice of	9525va				
0700-0800 as	Italy, IRRS	7120va				0800-0900 as/vl	Italy, IRRS	7120va				
0700-0800	Kenya, Kenya BC Corp	4885do	4935do			0800-0900	Kenya, Kenya BC Corp	4885do	4935do			
0700-0800	Kiribati, Radio	9810do				0800-0900	Kiribati, Radio	9810do				
0700-0800 vl	Lesotho, Radio	4800do				0800-0900 vl	Lesotho, Radio	4800do				
0700-0715	Liberia,LCN/R Liberia Int	5100do				0800-0900	Liberia,LCN/R Liberia Int	5100do				
0700-0800	Malaysia, Radio	7295do				0800-0900	Malaysia, Radio	7295do				
0700-0800	Malaysia, RTM Sarawak	7160do				0800-0825	Malaysia, Voice of	6175as	9750as	15295as		
0700-0800	Malaysia, Voice of	6175as	9750as	15295as		0800-0900 vl	Malaysia,RTM KotaKinabalu	5980do				
0700-0800 mtwhf	Monaco, Trans World Radio	6045eu	9870eu			0800-0900 s	Malta, VO Mediterranean	11770eu				
0700-0705	New Zealand, R NZ Intl	11905va				0800-0820 mtwhf	Monaco, Trans World Radio	6045eu	9870eu			
0700-0800 vl	Nigeria, Radio/Ibadan	6050do				0800-0830	Myanmar, Radio	9730do				
0700-0800 vl	Nigeria, Radio/Kaduna	4770do				0800-0900	N Marianas, KFBS Saipan	11650as	15380as			
0700-0800 vl	Nigeria, Voice of	7255af	15120va			0800-0900	New Zealand, R NZ Intl	9700va				
0700-0800	Palau, KHBN/Voice of Hope	9965as	9985as	13840as	15725as	0800-0900 vl	Nigeria, Radio/Ibadan	6050do				
0700-0730 vl	Papua New Guinea, NBC	9675do				0800-0900 vl	Nigeria, Radio/Kaduna	4770do				
0700-0756	Romania, R Romania Intl	15340af	17745af			0800-0900	Nigeria, Radio/Lagos	3326do				
0700-0800	Russia,Voice of Russia WS	17495au	17625au	17665au	21790au	0800-0900	Palau, KHBN/Voice of Hope	9955as	9985as	13840va	15725as	
0700-0800	Sierra Leone, SLBS	3316do				0800-0900 vl	Papua New Guinea, NBC	4890do				
0700-0800	Singapore,RCorp Singapore	6150do				0800-0900	Russia,Voice of Russia WS	15490au	17495au	17625au	21790au	
0700-0730	Slovakia, R Slovakia Intl	9440au	15460au	17550au		0800-0900	Sierra Leone, SLBS	5980do				
0700-0800 vl	Solomon Islands, SIBC	5020do				0800-0900	Singapore,RCorp Singapore	6150do				
0700-0730 mtwhf	Swaziland, Trans World R	4775af	6100af	9500af		0800-0900	South Korea, R Korea Intl	9570au	13670eu			
0700-0720 a	Swaziland, Trans World R	4775af	6100af	9500af		0800-0900	UK, BBC World Service	6190af	9740as	11940af	11955pa	
0700-0705 s	Swaziland, Trans World R	4775af	6100af	9500af				12095eu	15310as	15360as	15400af	
0700-0800	Taiwan, Radio Taipei Intl	5950na						15485eu	15565eu	17640eu	17760as	
0700-0800	UK, BBC World Service	6005af	6190af	7145af	9410eu			17790as	17830af	21660as		
		9740as	11760me	11765af	11835af	0800-0900 as	UK, BBC World Service	15575as	17885af			
		11940af	11955pa	12095eu	15310as	0800-0900	USA, KAIJ Dallas TX	5810na				
		15360as	15400af	15485eu	15565eu	0800-0900	USA, KNLS Anchor Point AK	9615as				
		15575as	17640eu	17760as	17790as	0800-0900	USA, KTVN Salt Lk City UT	7510na				
		17830af	21660as			0800-0900	USA, KWHR Naalehu HI	11565pa	17780as			
0700-0715 as	UK, BBC World Service	17885af				0800-0900	USA, Voice of America	11775as	13610as	15150as		
0700-0800	USA, KAIJ Dallas TX	5810na				0800-0900	USA, WEWN Birmingham AL	5825va				
0700-0800	USA, KTVN Salt Lk City UT	7510na				0800-0900	USA, WHRA Greenbush ME	11565af				
0700-0800	USA, KWHR Naalehu HI	11565as	17780as			0800-0900	USA, WHRI Noblesville IN	5745na	7315sa			
0700-0800	USA, WEWN Birmingham AL	5825va				0800-0900	USA, WJCR Upton KY	7490na				
0700-0800	USA, WHRA Greenbush ME	11565af				0800-0900	USA, WRNO New Orleans LA	7395na				
0700-0800	USA, WHRI Noblesville IN	5745na	7315sa			0800-0900	USA, WSHB Cypress Crk SC	9845pa	9860eu			
0700-0800	USA, WJCR Upton KY	7490na				0800-0900	USA, WWCR Nashville TN	2390na	3210na	5070na	5935na	
0700-0800	USA, WRNO New Orleans LA	7395na				0800-0900 vl	Vanuatu, Radio	4960do				
0700-0800	USA, WSHB Cypress Crk SC	13650af				0800-0900	Zambia, Christian Voice	9865do				
0700-0800	USA, WWCR Nashville TN	2390na	3210na	5070na	5935na	0800-0900	Zambia, Natl BC Corp	6165do	6265do			
0700-0745	USA, WYFR Okeechobee FL	7355eu	9985eu	13695va		0800-0900 vl	Zimbabwe, Zimbabwe BC	4828do	5012do			
0700-0800 vl	Vanuatu, Radio	4960do				0804-0820	Pakistan, Radio	15530eu	17835eu			
0700-0800	Zambia, Christian Voice	9865do				0805-0810 mtwhfa	Croatia, Croatian Radio	5945eu	7365eu	9830eu		
0700-0800	Zambia, Natl BC Corp	6165do	6265do			0815-0900 f	Seychelles, FEBA Radio	15460as				
0700-0800 vl	Zimbabwe, Zimbabwe BC	4828do	5012do			0820-0830 t	Kyrgyzstan, Kyrgyz Radio	4010do	4050do			
0705-0710 s	Croatia, Croatian Radio	5945eu	7365eu	9830eu		0820-0850 s	Monaco, Trans World Radio	6045eu	9870eu			
0706-0800	New Zealand, R NZ Intl	9700va				0830-0900 vl	Australia, ABC/Alice Spgs	2310do				
0715-0800	UK, BBC World Service	15575af	17885af			0830-0900 vl	Australia, ABC/Katherine	2485do				
0725-0800	Myanmar, Radio	9730do				0830-0900 vl	Australia, ABC/Tent Creek	2325do				
0730-0800	Austria, R Austria Intl	6155eu	13730eu	15410eu	17870eu	0830-0900	Australia, Radio	17750as				
0730-0800	Georgia, Georgian Radio	11910eu				0830-0900	Austria, R Austria Intl	21650as	21765as			
0730-0800 vl	Papua New Guinea, NBC	4890do				0830-0900	Georgia, Georgian Radio	11910me				
0730-0735 mtwhf	Swaziland, Trans World R	4775af				0830-0900 vl	Solomon Islands, SIBC	5020do				
0730-0800	Switzerland, Swiss R Intl	15545af	17685af	21750af		0830-0900	Switzerland, Swiss R Intl	9885as	13685as			
0740-0800	Guam, TWR/KTWR	15200as				0845-0900 mtwhf	USA, WRMI/R Miami Intl	9955am				

## HAUSER'S HIGHLIGHTS


## UKRAINE: RADIO UKRAINE INTERNATIONAL

Logs of RUI on 17715, including English at 2100 are very likely to be a third harmonic of 5905 which in use at 1700-0200 at 254 degrees (Mikhail Timofeev, Russia, via Wolfgang Bueschel)



## FREQUENCIES

0900-1000	Anguilla,Caribbean Beacon	6090am				1000-1100	Anguilla,Caribbean Beacon	11775am			
0900-1000 vl	Australia, ABC/Alice Spgs	2310do				1000-1030	Armenia, Voice of	4810eu	15270eu		
0900-1000 vl	Australia, ABC/Katherine	2485do				1000-1100 vl	Australia, ABC/Alice Spgs	2310do			
0900-1000 vl	Australia, ABC/Tent Creek	2325do				1000-1100 vl	Australia, ABC/Katherine	2485do			
0900-1000	Australia, Radio	11650va	13605as	17750as	21820as	1000-1100 vl	Australia, ABC/Tent Creek	2325do			
0900-0910 s	Bhutan, Bhutan BC Service	6030do				1000-1100	Australia, Radio	11650va	11880as	17750as	21820as
0900-1000 vl	Botswana, Radio	4820do	4830do	7255do		1000-1100 vl	Botswana, Radio	4820do	4830do	7255do	
0900-1000	Canada, CFRX Toronto	6070do				1000-1100 vl	Canada, CBC N Quebec Svc	9625do			
0900-1000	Canada, CFVP Calgary	6030do				1000-1100	Canada, CFRX Toronto	6070do			
0900-1000	Canada, CHNX Halifax	6130do				1000-1100	Canada, CFVP Calgary	6030do			
0900-1000	Canada, CKZN St John's	6160do				1000-1100	Canada, CHNX Halifax	6130do			
0900-1000	Canada, CKZU Vancouver	6160do				1000-1100	Canada, CKZN St John's	6160do			
0900-0956	China, China Radio Intl	11730pa	15210pa			1000-1100	Canada, CKZU Vancouver	6160do			
0900-1000	Costa Rica,RF Peace Intl	6975am				1000-1056	China, China Radio Intl	11730pa	15210pa		
0900-0929	Czech Rep, R Prague Intl	21745va				1000-1100	Costa Rica,RF Peace Intl	6975am			
0900-1000	Ecuador, HCJB	15115pa	21455va			1000-1100	Ecuador, HCJB	15115pa	21455va		
0900-1000	Eqt Guinea, Radio Africa	15186af				1000-1100	Eqt Guinea, Radio Africa	15186af			
0900-0945	Germany, Deutsche Welle	6140eu	6160pa	9565af	15210af	1000-1100	Germany, Deutsche Welle	6140eu			
		15410af	17560as	17800af	21680as	1000-1100	Germany, Voice of Hope	5975eu			
		21790af				1000-1100	Guam, AWR/KSDA	11560as			
0900-1000 a	Germany, Good News World	5995eu				1000-1100	Guam, TWR/KTWR	9865as			
0900-1000	Germany, Voice of Hope	5975eu				1000-1100	Guyana, GBC/Voice of	5950do			
0900-1000	Germany,Overcomer Ministr	13810au				1000-1100	India, All India Radio	11585as	11737au	13700as	15020as
0900-0915	Ghana, Ghana BC Corp	4915do	6130do			1000-1100		17385au	17840as		
0900-0930	Guam, TWR/KTWR	15330as				1000-1100 as/vl	Italy, IRRS	7120va			
0900-1000	Guyana, GBC/Voice of	5950do				1000-1100	Japan, Radio/NHK	9695as	11850pa	15590as	
0900-1000 as/vl	Italy, IRRS	7120va				1000-1100	Jordan, Radio	11690eu			
0900-1000	Kenya, Kenya BC Corp	4935do				1000-1100	Kenya, Kenya BC Corp	4935do			
0900-0930	Kiribati, Radio	9810do				1000-1010 fa	Kyrgyzstan, Kyrgyz Radio	4010do	4050do		
0900-1000 vl	Lesotho, Radio	4800do				1000-1100 vl	Lesotho, Radio	4800do			
0900-0915	Liberia,LCN/R Liberia Int	5100do				1000-1100	Malaysia, Radio	7295do			
0900-1000	Malaysia, Radio	7295do				1000-1100 vl	Malaysia,RTM KotaKinabalu	5980do			
0900-1000 vl	Malaysia,RTM KotaKinabalu	5980do				1000-1100	N Marianas, KFBS Saipan	9495as	11650as	15380as	
0900-1000	N Marianas, KFBS Saipan	9495as	11650as	15380as		1000-1100	N Marianas, KHBI Saipan	11660as	15665as		
0900-1000	N Marianas, KHBI Saipan	11660as	15665as			1000-1030	Netherlands, Radio	9820au	12065as	13710as	
0900-1000	New Zealand, R NZ Intl	9700va				1000-1015	New Zealand, R NZ Intl	9700va			
0900-1000 vl	Nigeria, Radio/Ibadan	6050do				1000-1100 vl	Nigeria, Radio/Ibadan	6050do			
0900-1000 vl	Nigeria, Radio/Kaduna	4770do				1000-1100 vl	Nigeria, Radio/Kaduna	4770do			
0900-1000	Nigeria, Radio/Lagos	3326do				1000-1100 vl	Nigeria, Voice of	7255af	15120va		
0900-1000	Palau, KHBN/Voice of Hope	9955as	9965as	9985as	13840va	1000-1100	Palau, KHBN/Voice of Hope	9955as	9965as	9985as	13840va
		15725as						15725as			
0900-1000 vl	Papua New Guinea, NBC	4890do				1000-1100 vl	Papua New Guinea, NBC	4890do			
0900-1000	Sierra Leone, SLBS	5980do				1000-1100	Philippines, FEBC R Intl	11635as			
0900-1000	Singapore,RCorp Singapore	6150do				1000-1100	Sierra Leone, SLBS	5980do			
0900-1000 vl	Solomon Islands, SIBC	5020do				1000-1030	Singapore, RTE Radio	11740as			
0900-1000	Tanzania, Radio	5050af				1000-1100	Singapore,RCorp Singapore	6150do			
0900-1000	UK, BBC World Service	6065as	6190af	6195as	9580as	1000-1100 vl	Solomon Islands, SIBC	5020do			
		9740as	11760me	11765pa	11940af	1000-1030	Switzerland, Swiss R Intl	15315eu			
		11945as	11955as	12095eu	15190sa	1000-1030	Tanzania, Radio	5050af			
		15310as	15360as	15400af	15485eu	1000-1100	UK, BBC World Service	5965am	6195va	9740as	11760me
		15565eu	15575as	17640eu	17760as			11765pa	11940af	12095eu	15310as
		17790as	17830af	17885af	21660as			15360as	15485eu	15565eu	15575as
		5810na						17640eu	17760as	17790as	17885af
		7510na						21660as			
0900-1000	USA, KAIJ Dallas TX	5810na				1000-1100 as	UK, BBC World Service	15190sa	15400af	17830af	
0900-1000	USA, KTVN Salt Lk City UT	7510na				1000-1100	USA, KAIJ Dallas TX	5810na			
0900-1000	USA, KWHR Naalehu HI	11565pa	17780as			1000-1100	USA, KTVN Salt Lk City UT	7510na			
0900-1000	USA, Voice of America	11775as	13610as	15150as	15665as	1000-1100	USA, KWHR Naalehu HI	9930as	11565pa		
0900-1000	USA, WEWN Birmingham AL	5825va				1000-1100	USA, Voice of America	6165ca	7405ca	9590ca	9770pa
0900-1000	USA, WHRA Greenbush ME	11565af						11660as	11720as	15240as	15425as
0900-1000	USA, WHRI Noblesville IN	5745na	7315na					15665as			
0900-1000	USA, WJCR Upton KY	7490na				1000-1100	USA, WEWN Birmingham AL	7425na	15745eu		
0900-1000	USA, WRNO New Orleans LA	7395na				1000-1100	USA, WHRI Noblesville IN	6040na	9495am		
0900-1000	USA, WSHB Cypress Crk SC	9455sa	9860eu			1000-1100	USA, WJCR Upton KY	7490na			
0900-1000	USA, WWCR Nashville TN	2390na	3210na	5070na	5935na	1000-1100	USA, WRNO New Orleans LA	7395na			
0900-1000	Zambia, Christian Voice	9865do				1000-1100	USA, WSHB Cypress Crk SC	6095am	9455sa		
0900-1000	Zambia, Natl BC Corp	6165do	6265do			1000-1100 as	USA, WWBS Macon GA	11900na			
0900-1000 vl	Zimbabwe, Zimbabwe BC	4828do	5012do			1000-1100	USA, WWCR Nashville TN	2390na	5070na	5935na	12160na
0905-0910 s	Croatia, Croatian Radio	7365eu	9830eu	13830eu		1000-1100	USA, WYFR Okeechobee FL	5950na			
0930-1000	Guam, TWR/KTWR	9865as				1000-1027	Vietnam, Voice of	12019as	13740as		
0930-1000	Italy, AWR Europe	7230eu				1000-1100	Zambia, Christian Voice	9865do			
0930-1000	Lithuania, Radio Vilnius	9555eu	9710eu			1000-1100	Zambia, Natl BC Corp	6165do	6265do		
0930-1000	Netherlands, Radio	9820au	12065as	13710as		1000-1100 vl	Zimbabwe, Zimbabwe BC	4828do	5012do		
0930-1000	Philippines, FEBC R Intl	11635as				1015-1030 mtwhfa	Vatican City, Vatican R	5883eu	9645eu	11740eu	15595eu
0945-1000	Germany, Deutsche Welle	6140eu						21850va			
0950-0945 a	UK, BBC World Service	6095as	9580as	11945as	11955as			9880eu	11615eu		
		15280as						5990do	7110do	9705do	
								15640va	17753as		
								7160do			
								6045eu	9820as	9860eu	12065as
								13710as			
								11715na			
								5050af			
								13675eu	15370eu	15395eu	21605eu



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1100-1200	Anguilla, Caribbean Beacon	11775am				1100-1130 vl	Solomon Islands, SIBC	5020do			
1100-1200 vl	Australia, ABC/Alice Spgs	2310do				1100-1200	Switzerland, Swiss R Intl	13735as	21770as		
1100-1200 vl	Australia, ABC/Katherine	2485do				1100-1200	Taiwan, Voice of Asia	7445as			
1100-1200 vl	Australia, ABC/Tent Creek	2325do				1100-1200 as	Tanzania, Radio	5050af			
1100-1200	Australia, Radio	5995pa	6020pa	9580va	11650va	1100-1130 mtwhf	UK, BBC Caribbean Report	6195ca			
		21820as				1100-1200	UK, BBC World Service	5965am	6190af	6195va	9580as
1100-1200 vl	Botswana, Radio	4820do	4830do	7255do				9740as	11760me	11940af	11955as
1100-1200	Bulgaria, Radio	15700eu	17500eu					12095eu	15280as	15310as	15400af
1100-1200	Canada, CFRX Toronto	6070do						15485eu	15565eu	15575as	17640eu
1100-1200	Canada, CFVP Calgary	6030do						17705as	17790sa	17830af	17885af
1100-1200	Canada, CHNX Halifax	6130do						21660af			
1100-1200	Canada, CKZN St John's	6160do				1100-1130 as	UK, BBC World Service	15190sa	15220am		
1100-1200	Canada, CKZU Vancouver	6160do				1100-1200	Ukraine, R Ukraine Intl	21520au			
1100-1200	Costa Rica, RF Peace Intl	6975am				1100-1200	USA, KAIJ Dallas TX	5810na			
1100-1200	Ecuador, HCJB	12005ca	15115am	21455va		1100-1200	USA, KTBN Salt Lk City UT	7510na			
1100-1200	Eqt Guinea, Radio Africa	15186af				1100-1200	USA, KWHR Naalehu HI	9930as	11565pa		
1100-1145	Germany, Deutsche Welle	6140eu	15370af	15410af	17680af	1100-1200	USA, Voice of America	6160as	9355as	9645as	9760as
1100-1200 as	Ghana, Ghana BC Corp	4915do	6130do					9770as	11720as	15160as	15240as
1100-1200	Guyana, GBC/Voice of	5950do						15425as			
1100-1200	Iran, VOIRI	15255pa	15430me	17560as	21510as	1100-1130 mtwhf	USA, Voice of America	13675af	15510af	17690af	17780af
1100-1200 as/vl	Italy, IRRS	7120va						21705af			
1100-1200	Japan, Radio/NHK	6120na	9695as	15590as		1100-1200	USA, WEWN Birmingham AL	7425na	15745eu		
1100-1200	Jordan, Radio	11690eu				1100-1200	USA, WHRI Noblesville IN	6040na	9495am		
1100-1120 fa	Kazakhstan, R Almaty	9620eu	11840as			1100-1200	USA, WJCR Upton KY	7490na			
1100-1200	Kenya, Kenya BC Corp	4935do				1100-1200	USA, WRNO New Orleans LA	7395na			
1100-1130 s	Kyrgyzstan, Kyrgyz Radio	4010do	4050do			1100-1200	USA, WSHB Cypress Crk SC	6095am	11660am		
1100-1200 vl	Lesotho, Radio	4800do				1100-1200 as	USA, WWBS Macon GA	11900na			
1100-1110	Liberia, LCN/R Liberia Int	5100do				1100-1200	USA, WWCN Nashville TN	5070na	5935na	7435na	12160na
1100-1200	Malaysia, Radio	7295do				1100-1200	USA, WYFR Okeechobee FL	5850na	5950na	6015na	
1100-1200 vl	Malaysia, RTM KotaKinabalu	5980do				1100-1200	Zambia, Christian Voice	9865do			
1100-1200	N Marianas, KFBS Saipan	9495as	11650as	15380as		1100-1200	Zambia, Natl BC Corp	6165do	6265do		
1100-1200	N Marianas, KHBI Saipan	9355as				1100-1200 vl	Zimbabwe, Zimbabwe BC	4828do	5012do		
1100-1125	Netherlands, Radio	6045eu	9820au	9860eu	12065as	1104-1120	Pakistan, Radio	15540eu	17835eu		
		13710as				1106-1200	occnsal	New Zealand, R NZ Intl	9700va		
1100-1200 vl	Nigeria, Radio/Ibadan	6050do				1115-1145	Nepal, Radio	5005as	7165as		
1100-1200 vl	Nigeria, Radio/Kaduna	4770do				1120-1140 w	Kazakhstan, R Almaty	9620eu	11840as		
1100-1200 vl	Nigeria, Voice of	7255af	15120va			1125-1200	Netherlands, Radio	6045eu	9860eu		
1100-1200	North Korea, R Pyongyang	3560as	9640af	9850as	9975me	1130-1156	Belgium, R Vlaanderen Intl	5985eu			
		11335am	13650va			1130-1200	China, China Radio Intl	8660as	11700as		
1100-1120	Pakistan, Radio	7110do	11835do			1130-1200 vl	Libya, Voice of Africa	15235va	15415va	15435va	
1100-1200	Palau, KHBN/Voice of Hope	9955as	9965as	9985as	13840va	1130-1200	Sweden, Radio	18960na	21810na		
		15725as				1130-1200 as	UK, BBC World Service	15310as			
1100-1200 vl	Papua New Guinea, NBC	4890do				1130-1200 f	Vatican City, Vatican R	15595au	17550au		
1100-1200	Sierra Leone, SLBS	5980do				1140-1200 t	Kazakhstan, R Almaty	9620eu	11840as		
1100-1200	Singapore, R Singapore Int	6015as	6150as			1145-1200	Germanv. Deutsche Welle	6140eu			

## SELECTED PROGRAMS

1100 UK, BBC London (as): Newdesk. World news and  
dispatches from overseas and UK correspondents

1100 Japan, NHK/Radio: News. See S 0000.

1110 Japan, NHK/Radio: Hello from Tokyo. See S 0110.

1130 UK, BBC London (as): Everywoman. Features and  
reports on the activities of women across the globe.

1130 UK, BBC London (as): Play of the Week (EAs). A  
different radio drama program each week  
(alternative programming for East Asia).

1100 UK, BBC London (as): Newsdesk. See S 1100.  
1100 Japan, NHK/Radio: News. See S 0000.  
1115 Japan, NHK/Radio: Asian Top News. See S 1411.

1125 Japan, NHK/Radio: Music Reflections. See M 0325.  
1130 UK, BBC London (as): Omnibus. See M 0030.  
1130 UK, BBC London (as): The Learning Zone (SAs). For  
people who want to learn more about subjects such  
as science, health, the world and work and literature  
while practicing English listening skills.

1125 Japan, NHK/Radio: Enjoy Japanese. See T 0325.  
1130 UK, BBC London (as): On Screen. Film reviews and  
movie news from around the world.  
1130 UK, BBC London (as): The Learning Zone (SAs). See  
M 1130.

1125 Japan, NHK/Radio: Music Reflections. See M 0325.  
1130 UK, BBC London (as): Meridian Live. What's happening in the arts round the world with a roundup of theatre in London.  
1130 UK, BBC London (as): The Learning Zone (SAs). See M 1130.

1125 Japan, NHK/Radio: My Japan Diary. See H 0325.  
1130 UK, BBC London (as): Meridian Books. A discussion of a  
current book of note.  
1130 UK, BBC London (as): The Learning Zone (SAs). See M  
1130.  
1145 UK, BBC London (as): Network II (SAs). Learning  
through the Internet.

1125 Japan, NHK/Radio: Music Beat. See F 0325.  
1130 UK, BBC London (as): Music Review. News and views  
from the world of music.  
1130 UK, BBC London (as): The Learning Zone (SAs). See M  
1130.

1100 UK, BBC London (as): Newsdesk. See S 1100.  
1100 Japan, NHK/Radio: News. See S 0000.  
1110 Japan, NHK/Radio: Asia Weekly. See S 0010.  
1130 UK, BBC London (AE): Lives and Times (4th,11th). See  
A 0430.  
1130 UK, BBC London (as): My Century. See M 0615.

## English effective 6 Sept to 31 Oct

0100-0200:	NAM	15595	15520	12050	7180				
0200-0300:	NAM	15595	15520	12050	7180				
0300-0500:	NAM	17660	15595	15465	15455	15425	12050	7180	7125
0300-0500:	EU	693							
0500-0900:	EU	1323	693						
0500-0600:	AU	21790	17625						

*Highlight, continued on page 52*







1300-1400	Anguilla, Caribbean Beacon	11775am				1300-1400	Singapore, R Singapore Int	6015as	6150as		
1300-1400 vl	Australia, ABC/Alice Spgs	2310do				1300-1330	South Korea, R Korea Intl	9570as	9640om	13670as	
1300-1400 vl	Australia, ABC/Katherine	2485do				1300-1400	Sri Lanka, Sri Lanka BC	6005as	9730as	15425as	
1300-1400 vl	Australia, ABC/Tent Creek	2325do				1300-1400 as	Tanzania, Radio	5050af			
1300-1400	Australia, Radio	5995pa	6020pa	9580va	11650va	1300-1325	Turkey, Voice of	15225eu	17560as		
		17750pa	21820as			1300-1400	Uganda, Radio	4976do			
1300-1400 vl	Botswana, Radio	4820do	4830do	7255do		1300-1400	UK, BBC World Service	5965am	5990as	6190af	6195va
1300-1320	Brazil, R Nacional Bras	15445am						9410eu	9515am	9740as	11760me
1300-1400 vl	Canada, CBC N Quebec Svc	9625do				1300-1400	USA, KJES Vado NM	11940af	12095eu	15220am	15310as
1300-1400	Canada, CFRX Toronto	6070do						15420af	15485eu	15565eu	15575me
1300-1400	Canada, CFVP Calgary	6030do						17640eu	17705as	17830af	17885af
1300-1400	Canada, CHNX Halifax	6130do						21660af			
1300-1400	Canada, CKZN St John's	6160do				1300-1400	USA, KAIJ Dallas TX	5810na			
1300-1400	Canada, CKZU Vancouver	6160do				1300-1400	USA, KJES Vado NM	11715na			
1300-1400 mtwhf	Canada, R Canada Intl	17765na	17820na			1300-1400	USA, KNLS Anchor Point AK	9615as			
1300-1400 s	Canada, R Canada Intl	13650na	17800na			1300-1400	USA, KTBN Salt Lk City UT	7510na			
1300-1400	China, China Radio Intl	11675pa	11900pa	11980as	15180as	1300-1400	USA, KWHR Naalehu HI	9930as	11565pa		
1300-1329	Czech Rep, R Prague Intl	13580eu	17485as			1300-1400	USA, Voice of America	6160as	9355as	9645as	9760as
1300-1400	Ecuador, HCJB	12005ca	15115am	21455va				11715as	15160as	15425as	
1300-1330	Egypt, Radio Cairo	17595as				1300-1400	USA, WEWN Birmingham AL	11875na	15745eu		
1300-1400	Eqt Guinea, Radio Africa	15186af				1300-1400	USA, WHRI Noblesville IN	6040na	15105am		
1300-1329	Germany, Deutsche Welle	6140eu				1300-1400	USA, WJCR Upton KY	7490na			
1300-1400 a	Germany, Good News World	15330as				1300-1400 s	USA, WRMI/R Miami Intl	9955am			
1300-1400	Ghana, Ghana BC Corp	4915do	6130do			1300-1400	USA, WRNO New Orleans LA	7395na			
1300-1400	Guyana, GBC/Voice of	5950do				1300-1400	USA, WSHB Cypress Crk SC	9430na	9495am		
1300-1400	Jordan, Radio	11690eu				1300-1400	USA, WWCR Nashville TN	9475na	12160na	13845na	15685na
1300-1400	Kenya, Kenya BC Corp	4935do				1300-1400	USA, WYFR Okeechobee FL	11550as	11830na	11970na	13695na
1300-1400 vl	Lesotho, Radio	4800do						17750na			
1300-1310	Liberia, LCN/R Liberia Int	5100do				1300-1400	Zambia, Christian Voice	9865do			
1300-1400	Malaysia, Radio	7295do				1300-1400	Zambia, Natl BC Corp	6165do	6265do		
1300-1400 vl	Malaysia, RTM KotaKinabalu	5980do				1300-1400 vl	Zimbabwe, Zimbabwe BC	4828do	5012do		
1300-1400	N Marianas, KFBS Saipan	9670as	11650as			1315-1325 mtwhfa	Bhutan, Bhutan BC Service	5030do			
1300-1400	N Marianas, KHBI Saipan	9355as				1325-1400	Germany, Voice of Hope	15715as			
1300-1400 occsnal	New Zealand, R NZ Intl	6100va				1330-1400	Austria, R Austria Intl	13730am			
1300-1400 vl	Nigeria, Radio/Ibadan	6050do				1330-1400	Canada, R Canada Intl	9535as	9640as	11795as	11935eu
1300-1400 vl	Nigeria, Radio/Kaduna	4770do						15325eu			
1300-1400	Palau, KHBN/Voice of Hope	9955as	9965as	9985as	13840va	1330-1400	Guam, AWR/KSDA	11705as			
		15725as				1330-1400	India, All India Radio	9545as	11620as	13710as	
1300-1400 vl	Papua New Guinea, NBC	4890do				1330-1400	Sweden, Radio	9435as	15240na	17505as	
1300-1400	Philippines, FEBC R Intl	1195as				1330-1400	UAE, Radio Dubai	13630eu	13675eu	15395eu	21605eu
1300-1356	Romania, R Romania Intl	9690eu	15390eu	15445eu	17720na	1330-1400	Uzbekistan, R Tashkent	7285as	9715as	15295as	17775as
1300-1400 as	S Africa, Channel Africa	11720af	17860af	21530af		1330-1357	Vietnam, Voice of	9730eu	9840eu		
1300-1400	Sierra Leone, SLBS	5980do				1345-1400	Vatican Citv, Vatican R	15500as	17550as		

## Sundays

1300 China, China Radio Intl: News. See S 0100.  
1310 China, China Radio Intl: News about China. See S 0110.  
1313 China, China Radio Intl: Sports Beat. See S 1213.  
1320 China, China Radio Intl: People in the Know. See S 1220.  
1325 China, China Radio Intl: Report on Developing Countries. See S 0120.  
1335 China, China Radio Intl: Song of the Week. See S 1235.  
1345 China, China Radio Intl: Voices from Other Lands. See S 1245.

1300 China, China Radio Intl: News. See S 0100.  
1310 China, China Radio Intl: News about China. See S  
0110.  
1320 China, China Radio Intl: Current Affairs. See M  
1220.  
1325 China, China Radio Intl: Press Clippings. See M  
1225.

1330 China, China Radio Intl: China's Open Windows. See M 1230.

1334 China, China Radio Intl: Changzhou Reports. See M 1234.

1345 China, China Radio Intl: Idioms and Their Stories. See M 1245.

1339 China, China Radio Intl: Orient Arena. See T 1239  
1345 China, China Radio Intl: Voices from Other Lands.  
See S 1245.

## Wednesdays

1338 China, China Radio Intl: Profile. See W 1238.  
1345 China, China Radio Intl: Learn to Speak Chinese. See W 1245.

## Thursdays

1335 China, China Radio Intl: Across the Land. See H 1235.  
1340 China, China Radio Intl: Focus. See H 1240.  
1344 China, China Radio Intl: Cultural Spectrum. See H 1244.

## Fridays

1335 China, China Radio Intl: Changzhou Reports. See M 1234.

1339 China, China Radio Intl: Life in China. See F 1239.

1345 China. China Radio Intl: Global Review. See F 1245.

## Saturdays

1300 China, China Radio Intl: News. See S 0100.  
1310 China, China Radio Intl: News about China. See S 0110.  
1315 China, China Radio Intl: Asia-Pacific News. See S 0115.  
1320 China, China Radio Intl: Report on Developing Countries. See S 0120.  
1330 China, China Radio Intl: China Scrapbook. See S 0130.  
1335 China, China Radio Intl: Music from China. See S 0135.

0600-0700:	AU	21790	17625	15490					
0600-0800:	AS	17655							
0700-0800:	AU	21790	17625	17495					
0800-0900:	AU	21790	17625	17495	15490				
1400-1500:	EU	1323	693						
1400-1500:	ME	648							
1400-1500:	AS	12025	12005	1269					
1500-1600:	EU	9730	9480	1494	1089*				
1500-1600:	ME	12070	7325	4975	4940	4730	1170*	1089*	972
1500-1600:	AS	11500	972						
1600-1700:	EU	9730	1494						

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## FREQUENCIES

1400-1500	Anguilla, Caribbean Beacon	11775am				1400-1500	Russia, Voice of Russia WS	12005as	12025as	15550as	
1400-1500 vl	Australia, ABC/Alice Spgs	2310do				1400-1455 as	S Africa, Channel Africa	11720af	17860af	21530af	
1400-1500 vl	Australia, ABC/Katherine	2485do				1400-1500	Sierra Leone, SLBS	5980do			
1400-1500 vl	Australia, ABC/Tent Creek	2325do				1400-1500	Singapore, RCorp Singapore	6150do			
1400-1430	Australia, Radio	5995as	6180va	9580va	11650va	1400-1500	Sri Lanka, Sri Lanka BC	6005as	9730as	15425as	
		17750pa				1400-1500	Switzerland, Swiss R Intl	9575as	17670as		
1400-1500 vl	Botswana, Radio	4820do	4830do	7255do		1400-1500	Taiwan, Radio Taipei Intl	15125as			
1400-1500 vl	Canada, CBC N Quebec Svc	9625do				1400-1500 as	Tanzania, Radio	5050af			
1400-1500	Canada, CFRX Toronto	6070do				1400-1430	Thailand, Radio	9580as	9655as	11905as	
1400-1500	Canada, CFVP Calgary	6030do				1400-1500	Uganda, Radio	4976do			
1400-1500	Canada, CHNX Halifax	6130do				1400-1500	UK, BBC World Service	3990as	6190af	6195as	9515am
1400-1500	Canada, CKZN St John's	6160do						9740as	11865am	11940af	12095eu
1400-1500	Canada, CKZU Vancouver	6160do						15310as	15485eu	15565eu	15575ma
1400-1500 s	Canada, R Canada Intl	13650na	17800na					17705as	17830af	17840am	21470af
1400-1456	China, China Radio Intl	7405na	11825as	15110af		1400-1500	USA, KAIJ Dallas TX	13815na			
1400-1500	Costa Rica, RF Peace Intl	21460am				1400-1500	USA, KJES Vado NM	11715na			
1400-1500	Ecuador, HCJB	12005ca	15115am	21455va		1400-1500	USA, KTVN Salt Lk City UT	7510na			
1400-1500	Eq Guinea, Radio Africa	15186af				1400-1500	USA, KWHR Naalehu HI	9930as	11565pa		
1400-1500	France, Radio France Intl	11910as	17560va	17680as		1400-1500	USA, Voice of America	6160as	7125as	7215as	9645as
1400-1500	Germany, RTE Radio	15625eu						9760as	15160as	15255va	15395as
1400-1500	Germany, Voice of Hope	15715as				1400-1500	USA, WEWN Birmingham AL	11875na	15745eu		
1400-1415	Ghana, Ghana BC Corp	4915do	6130do			1400-1500	USA, WGTG McCaysville GA	9370al	9400am		
1400-1500	Guyana, GBC/Voice of	5950do				1400-1500	USA, WHRI Noblesville IN	6040na	15105am		
1400-1500	India, All India Radio	9545as	11620as	13710as		1400-1500	USA, WJCR Upton KY	7490na			
1400-1430	Israel, Kol Israel	15650va	17615va			1400-1500 irreg	USA, WMLK Bethel PA	9465am			
1400-1500	Japan, Radio/NHK	9505na	11730as	11880me		1400-1500	USA, WRNO New Orleans LA	7395na			
1400-1500	Jordan, Radio	11690eu				1400-1500	USA, WWCR Nashville TN	9475na	12160na	13845na	15685na
1400-1500	Kenya, Kenya BC Corp	4935do				1400-1500	USA, WYFR Okeechobee FL	11550as	11830na	11970na	17750na
1400-1500 vl	Lesotho, Radio	4800do				1400-1405	Vatican City, Vatican R	15500as	17550as		
1400-1500	Malaysia, Radio	7295do				1400-1500	Zambia, Christian Voice	9865do			
1400-1500	Malaysia, RTM Sarawak	7160do				1400-1500	Zambia, Natl BC Corp	6165do	6265do		
1400-1500 vl	Malaysia, RTM KotaKinabalu	5980do				1400-1500 vl	Zimbabwe, Zimbabwe BC	4828do	5012do		
1400-1430	Mexico, Radio Mexico Intl	9705am				1410-1420	Greece, Voice of	9425eu	15630eu		
1400-1500	N Marianas, KFBS Saipan	9465as	9495as	9670as		1415-1420	Nepal, Radio	5005as	7165as		
1400-1500 occsnal	New Zealand, R NZ Intl	6100va				1430-1500	Australia, Radio	5995as	6180va	9500as	9580va
1400-1500 vl	Nigeria, Radio/Ibadan	6050do						11650va	11660as	17750pa	
1400-1500 vl	Nigeria, Radio/Kaduna	4770do				1430-1500 vl	China, China Radio Intl	8660as			
1400-1415	Pakistan, Radio	9645do				1430-1500	Guam, AWR/KSDA	11980as			

## SELECTED PROGRAMS

## Sundays

1405 UK, BBC London (AE/AF/AS): Matter for Debate (live). A new series in which listeners have the chance to put their views on the big moral and ethical questions of the day.

1410 Japan, NHK/Radio: Asia Weekly. See S 0010.

1411 Japan, NHK/Radio: Asian Top News. The most important stories of the past week from other Asian media organizations are summarized in a 10-minute format.

1413 China, China Radio Intl: Sports Beat. See S 1213.

1415 Taiwan, Radio Taipei Intl: Food, Poetry and Others. See S 0230.

1420 China, China Radio Intl: People in the Know. See S 1220.

1421 Japan, NHK/Radio: Asian Music. The ethnic music of a selected Asian country or region.

1423 Japan, NHK/Radio: Asian People in Japan. An "Asia Weekly" segment in which a foreigner living in Japan is interviewed.

1425 China, China Radio Intl: Report on Developing Countries. See S 0120.

1430 Taiwan, Radio Taipei Intl: Mailbag Time. See S 0245.

1435 China, China Radio Intl: Song of the Week. See S 1235.

1437 Japan, NHK/Radio: Asian Music. See S 1421.

1445 China, China Radio Intl: Voices from Other Lands. See S 1245.

1445 Taiwan, Radio Taipei Intl: Let's Learn Chinese. See S 0345.

1451 Japan, NHK/Radio: Asian News Summary. A wrap-up of regional events is heard as a segment of the program "Asia Weekly."

### Monday-Friday

1400 China, China Radio Intl: News. See S 0100.  
1400 Japan, NHK/Radio: News. See S 0000.  
1400 Taiwan, Radio Taipei Intl: News. See S 0200.  
1410 China, China Radio Intl: News about China. See S 0110.  
1415 Japan, NHK/Radio: 44 Minutes. See M 0515.

1420 China, China Radio Intl: Current Affairs. See M 1220.  
1425 China, China Radio Intl: Press Clippings. See M 1225.  
1434 Japan, NHK/Radio: Close Up. See M 0534.  
1445 Taiwan, Radio Taipei Intl: Let's Learn Chinese. See S 0345.  
1450 Japan, NHK/Radio: News Commentary. See M 0547.  
1445 Japan, NHK/Radio: Asia in Focus. See M 1445.  
1450 Japan, NHK/Radio: Tumbling Dice. See M 0552.  
1450 Taiwan, Radio Taipei Intl: Let's Learn Chinese. See S 0345.

## Mondays

1415	Taiwan, Radio Taipei Intl: Jade Bells and Bamboo Pipes. See M 0215.
1417	Japan, NHK/Radio: Interview Corner. See M 0517.
1430	China, China Radio Intl: China's Open Windows. See M 1230.
1434	China, China Radio Intl: Changzhou Reports. See M 1234.
1445	China, China Radio Intl: Idioms and Their Stories. See M 1245.
1445	Japan, NHK/Radio: Asia in Focus. A segment of the "44 Minutes" program with regional news items.

## Tuesdays

1415 Taiwan, Radio Taipei Intl: Taiwan Today. See T 1215.  
1417 Japan, NHK/Radio: Interview Corner. See M 0517.  
1430 Taiwan, Radio Taipei Intl: Trends. See T 0230.  
1430 UK, BBC London (AF/AS): Car Stories (7th,14th). See  
W 0430.  
1439 China, China Radio Intl: Orient Arena. See T 1239.  
1445 China, China Radio Intl: Voices from Other Lands. See S  
1245.

## Wednesdays

1415 Taiwan, Radio Taipei Intl: Miss Mook's Big Countdown. See W 1215.

1417 Japan, NHK/Radio: Interview Corner. See M 0517.

1438 China, China Radio Intl: Profile. See W 1238.

1445 China, China Radio Intl: Learn to Speak Chinese. See W 1245.

## Thursdays

1415	Taiwan, Radio Taipei Intl: Treasures of the Orient. See H 1215.
1417	Japan, NHK/Radio: Interview Corner. See M 0517.
1434	Taiwan, Radio Taipei Intl: Hot Spots. See H 0234.
1435	China, China Radio Intl: Across the Land. See H 1235.
1440	China, China Radio Intl: Focus. See H 1240.
1444	China, China Radio Intl: Cultural Spectrum. See H 1244.

## Fridays

1415	Taiwan, Radio Taipei Intl: Taipei Magazine. See F 0215.
1417	Japan, NHK/Radio: Interview Corner. See M 0517.
1430	Taiwan, Radio Taipei Intl: Life on the Outside. See F 0230.
1434	Japan, NHK/Radio: Business Focus. A segment of the program "44 Minutes" which spotlights an aspect of business in Japan.
1435	China, China Radio Intl: Changzhou Reports. See M 1234.
1439	China, China Radio Intl: Life in China. See F 1239.
1445	China, China Radio Intl: Global Review. See F 1245.

## Saturdays

1410 Japan, NHK/Radio: Weekend Break. See S 0510.  
1415 China, China Radio Intl: Asia-Pacific News. See S 0115.  
1415 Taiwan, Radio Taipei Intl: Kaleidoscope. See S 0315.  
1420 China, China Radio Intl: Report on Developing Countries. See S 0120.  
1430 China, China Radio Intl: China Scrapbook. See S 0130.  
1430 Taiwan, Radio Taipei Intl: Reflections. See S 0330.  
1435 China, China Radio Intl: Music from China. See S 0135.  
1445 Taiwan, Radio Taipei Intl: Let's Learn Chinese. See S 0345.

## FREQUENCIES

1500-1600	Anguilla, Caribbean Beacon	11775am				1500-1600 vl	Russia, Voice of Assyria	6005me	9480me		
1500-1600 vl	Australia, ABC/Alice Spgs	2310do				1500-1600	Russia, Voice of Russia WS	4730me	4940me	4975me	7325me
1500-1600 vl	Australia, ABC/Katherine	2485do						9480eu	9730eu	11500as	12070me
1500-1600 vl	Australia, ABC/Tent Creek	2325do				1500-1530	S Africa, Channel Africa	17770af			
1500-1600	Australia, Radio	5995as	6180va	9500as	9580va	1500-1600	Seychelles, FEBA Radio	11600as			
		11650va	11660as	17750pa		1500-1600	Sierra Leone, SLBS	5980do			
1500-1600 vl	Botswana, Radio	4820do	4830do	7255do		1500-1600	Singapore, RCorp Singapore	6150do			
1500-1600 vl	Canada, CBC N Quebec Svc	9625do				1500-1600	Sri Lanka, Sri Lanka BC	6005as	9730as	15425as	
1500-1600	Canada, CFRX Toronto	6070do				1500-1600 as	Tanzania, Radio	5050af			
1500-1600	Canada, CFVP Calgary	6030do				1500-1600	Uganda, Radio	4976do			
1500-1600	Canada, CHNX Halifax	6130do				1500-1600	UK, BBC World Service	5975as	5990as	6190af	6195as
1500-1600	Canada, CKZN St John's	6160do						9410eu	9515am	9740as	11860af
1500-1600	Canada, CKZU Vancouver	6160do						11940af	12095eu	15220am	15310as
1500-1600 s	Canada, R Canada Intl	13650na	17800na					15400af	15420af	15485eu	15575eu
1500-1556	China, China Radio Intl	7160as	9785as					17705as	17830af	17840am	21470af
1500-1600	Costa Rica, RF Peace Intl	15050am	21460am			1500-1600	USA, KAIJ Dallas TX	21490af	21660af		
1500-1600	Ecuador, HCJB	12005ca	15115am	21455va		1500-1600	USA, KTNB Salt Lk City UT	13815na			
1500-1600	Eqt Guinea, Radio Africa	15186af				1500-1600	USA, KWHR Naalehu HI	15590na			
1500-1600	Germany, Voice of Hope	15715as				1500-1600	USA, Voice of America	9930as	11565pa		
1500-1600	Guyana, GBC/Voice of	5950do				1500-1600	USA, WEWN Birmingham AL	7125as	7215as	9645as	9700me
1500-1600	Japan, Radio/NHK	7200as	9505na	9750as	11730as	1500-1600	USA, WGTG McCaysville GA	15205va	15255va	15395as	
1500-1600	Jordan, Radio	11690eu				1500-1600	USA, WHRI Noblesville IN	11875na	15745eu		
1500-1600	Kenya, Kenya BC Corp	4935do				1500-1600	USA, WINB Red Lion PA	9370al	9400am		
1500-1600 vl	Lesotho, Radio	4800do				1500-1600	USA, WJCR Upton KY	13760na	15105sa		
1500-1510	Liberia, LCN/R Liberia Int	5100do				1500-1600	USA, WMLK Bethel PA	13800am			
1500-1600	Malaysia, Radio	7295do				1500-1600	USA, WRNO New Orleans LA	7490na			
1500-1600	Malaysia, RTM Sarawak	7160do				1500-1600 irreg	USA, WWR Nashville TN	9465am			
1500-1600 vl	Malaysia, RTM Kota Kinabalu	5980do				1500-1600	USA, WYFR Okeechobee FL	7395na	12160na	13845na	15685na
1500-1530	Mexico, Radio Mexico Intl	9705am				1500-1600	Zambia, Christian Voice	9475na	11830na	17750na	
1500-1530	Mongolia, Voice of	9720as	12015as			1500-1600	Zambia, Natl BC Corp	9865do	6165do	6265do	5012do
1500-1600	Myanmar, Radio	5986do				1500-1600 vl	Zimbabwe, Zimbabwe BC	4828do			
1500-1600	N Marianas, KFBS Saipan	9465as	9495as	9670as		1515-1600	Seychelles, FEBA Radio	11695as			
1500-1600	Netherlands, Radio	9890as	12075as	15590as		1530-1540	Bangladesh, Bangla Betar	4880as	15520as		
1500-1600 ocsnal	New Zealand, R NZ Intl	6100va				1530-1600	Georgia, Georgian Radio	6180me			
1500-1600 vl	Nigeria, Radio/Ibadan	6050do				1530-1600	Guam, AWR/KSDA	9355as	11920as		
1500-1600 vl	Nigeria, Radio/Kaduna	4770do				1530-1600	Iran, VOIRI	7250as	11680as	13605as	15150as
1500-1600 vl	Nigeria, Voice of	7255af	15120va			1530-1600	Tanzania, Radio	5050af			
1500-1600	North Korea, R Pyongyang	3560eu	9640as	9975me	11335am	1545-1600 sh	Bangladesh, Bangla Betar	4880as	15520as		
		11735am	13650va			1545-1600 m	Guam, TWR/KTWR	15330as			
1500-1600	Palau, KHBN/Voice of Hope	9955as	9965as	9985as	15725as	1550-1600 a	Vatican City, Vatican R	12065om	13765au	15500au	
1500-1600 vl	Papua New Guinea, NBC	4890do									

## SELECTED PROGRAMS

## Sundays

- 1500 China, China Radio Intl: News. See S 0100.  
 1500 Japan, NHK/Radio: News. See S 0000.  
 1510 China, China Radio Intl: News about China. See S 0110.  
 1510 Japan, NHK/Radio: Hello from Tokyo. See S 0110.  
 1513 China, China Radio Intl: Sports Beat. See S 1213.  
 1520 China, China Radio Intl: People in the Know. See S 1220.  
 1525 China, China Radio Intl: Report on Developing Countries. See S 0120.  
 1535 China, China Radio Intl: Song of the Week. See S 1235.  
 1545 China, China Radio Intl: Voices from Other Lands. See S 1245.

## Monday-Friday

- 1500 China, China Radio Intl: News. See S 0100.  
 1500 Japan, NHK/Radio: News. See S 0000.  
 1510 China, China Radio Intl: News about China. See S 0110.  
 1515 Japan, NHK/Radio: Asian Top News. See S 1411.  
 1520 China, China Radio Intl: Current Affairs. See M 1220.  
 1525 China, China Radio Intl: Press Clippings. See M 1225.

## Mondays

- 1525 Japan, NHK/Radio: Music Reflections. See M 0325.  
 1530 China, China Radio Intl: China's Open Windows. See M 1230.  
 1534 China, China Radio Intl: Changzhou Reports. See M 1234.  
 1545 China, China Radio Intl: Idioms and Their Stories. See M 1245.

## Tuesdays

- 1525 Japan, NHK/Radio: Let's Try Japanese. A course in the Japanese language.  
 1539 China, China Radio Intl: Orient Arena. See T 1239.  
 1545 China, China Radio Intl: Voices from Other Lands. See S 1245.

## Wednesdays

- 1525 Japan, NHK/Radio: Music Journey Around Japan. A new Radio Japan music program.  
 1538 China, China Radio Intl: Profile. See W 1238.  
 1545 China, China Radio Intl: Learn to Speak Chinese. See W 1245.

## Thursdays

- 1535 China, China Radio Intl: Across the Land. See H 1235.  
 1540 China, China Radio Intl: Focus. See H 1240.  
 1544 China, China Radio Intl: Cultural Spectrum. See H 1244.  
 1546 Japan, NHK/Radio: My Japan Diary. See H 0325.

## Fridays

- 1525 Japan, NHK/Radio: Music Beat. See F 0325.  
 1535 China, China Radio Intl: Changzhou Reports. See M 1234.  
 1539 China, China Radio Intl: Life in China. See F 1239.  
 1545 China, China Radio Intl: Global Review. See F 1245.

## Saturdays

- 1500 China, China Radio Intl: News. See S 0100.  
 1500 Japan, NHK/Radio: News. See S 0000.  
 1510 China, China Radio Intl: News about China. See S 0110.  
 1510 Japan, NHK/Radio: Asia Weekly. See S 0010.  
 1515 China, China Radio Intl: Asia-Pacific News. See S 0115.  
 1520 China, China Radio Intl: Report on Developing Countries. See S 0120.

- 1530 China, China Radio Intl: China Scrapbook. See S 0130.  
 1535 China, China Radio Intl: Music from China. See S 0135.

HAUSER'S HIGHLIGHTS  
UZBEKISTAN: R. TASHKENT

English to Asia  
 0100-0130 7190, 9375, 9530, 9715  
 1200-1230 and [different programs]  
 1330-1400 7285, 9715, 15295, 17775  
 English to Eu  
 2030-2100 9540, 9545  
 2130-2200 7105, 9540  
 (BBC Monitoring)

HAUSER'S HIGHLIGHTS  
GERMANY: DEUTSCHE WELLE

I received confirmation from a well-placed source that Deutsche Welle plans in B99 to use its 25740 channel again. I hadn't realized that this is a regular DW channel, as I was still growing up when they stopped using 11 metres.  
 (Kai Ludwig, Germany)

## FREQUENCIES

1600-1700	Algeria, R Algiers Intl	11715af	15160me	1600-1700	Sierra Leone, SLBS	5980do		
1600-1700	Anguilla, Caribbean Beacon	11775am		1600-1700	South Korea, R Korea Intl	5975om	9515af	9870af
1600-1700 vl	Australia, ABC/Alice Spgs	2310do		1600-1700	Swaziland, Trans World R	9500af		
1600-1700 vl	Australia, ABC/Katherine	2485do		1600-1615	Switzerland, Swiss R Intl	9575as	17670as	
1600-1700 vl	Australia, ABC/Tent Creek	2325do		1600-1700	Tanzania, Radio	5050af		
1600-1700	Australia, Radio	5995as	6180va 9500as 9580va	1600-1645	UAE, Radio Dubai	13630eu	13675eu	15395eu 21605eu
		11650va	11660as 11750pa	1600-1700	Uganda, Radio	4976do		
		4820do	4830do 7255do	1600-1700	UK, BBC World Service	3915as	5975as	5990as 6190af
1600-1700 vl	Botswana, Radio	9625do				6195as	7160as	9410eu 9515am
1600-1700 vl	Canada, CBC N Quebec Svc	6070do				9740as	11940af	12095eu 15310as
1600-1700	Canada, CFRX Toronto	6030do				15400af	15485eu	15575am 17705as
1600-1700	Canada, CFVP Calgary	6130do				17830af	17840am	21470af 21660af
1600-1700	Canada, CHNX Halifax	6160do		1600-1700	UK, Merlin Network One	6175eu		
1600-1700	Canada, CKZN St John's	6160do		1600-1700	USA, KAJJ Dallas TX	13815na		
1600-1700	Canada, CKZU Vancouver	9565af	9870af	1600-1700	USA, KTBN Salt Lk City UT	15590na		
1600-1656	China, China Radio Intl	15050am	21460am	1600-1700	USA, KWHR Naalehu HI	9930as		
1600-1700	Costa Rica, RF Peace Intl	5930eu	21745af	1600-1700	USA, Voice of America	6035af	6110as	6160as 7125as
1600-1627	Czech Rep, R Prague Intl	12005ca	15115am 21455va			7215as	9645as	9700as 9760as
1600-1630	Ecuador, HCJB	15186af				13710af	15205va	15225af 15255va
1600-1700	Eqi Guinea, Radio Africa	7165af	9560af			15395as	15410af	
1600-1700	Ethiopia, Radio	11615af	11995af 12015af 15210af	1600-1700	USA, WEWN Birmingham AL	11875na	13615na	
1600-1700	France, Radio France Intl	17605af		1600-1700	USA, WGTG McCaysville GA	9370af	9400am	
		6140eu	6170as 7225as 9735af	1600-1700	USA, WHRA Greenbush ME	17650af		
1600-1645	Germany, Deutsche Welle	9875as	11810af 15135af 17595as	1600-1700	USA, WHRI Noblesville IN	13760na	15105sa	
		21695af		1600-1700	USA, WINB Red Lion PA	13800am		
1600-1700 s	Germany, Good News World	15105va		1600-1700	USA, WJCR Upton KY	7490na		
1600-1630 irreg/s	Germany, Universal Life	15105af		1600-1700	USA, WRNO New Orleans LA	7395na		
1600-1630	Germany, Voice of Hope	15715as		1600-1700	USA, WSHB Cypress Crk SC	18915af		
1600-1700	Germany, Overcomer Ministr	13810me		1600-1700	USA, WWCR Nashville TN	9475na	12160na	13845na 15685na
1600-1700	Guam, AWR/KSDA	9355as	11920as	1600-1700	USA, WYFR Okeechobee FL	11830na	15600na	15695eu 17555eu
1600-1630 as	Guam, TWR/KTWR	15330as				17750na	21525af	
1600-1700	Guyana, GBC/Voice of	5950do		1600-1615 a	Vatican City, Vatican R	12065om	13765au	15500au
1600-1630	Iran, VOIRI	7250as	11680as 13605as 15150as	1600-1700	Zambia, Christian Voice	4965do		
1600-1630	Jordan, Radio	11690eu		1600-1700	Zambia, Natl BC Corp	6165do	6265do	
1600-1700	Kenya, Kenya BC Corp	4935do		1600-1630 vl	Zimbabwe, Zimbabwe BC	4828do	5012do	
1600-1700 vl	Lesotho, Radio	4800do		1615-1700 a	UK, BBC World Service	9515am	11860af	
1600-1700	Malaysia, Radio	7295do		1615-1700 a	UK, BBC World Service	9515am		
1600-1700	N Marianas, KFBS Saipan	9465as	9495as	1615-1630	Vatican City, Vatican R	4005eu	5883eu	7250eu 9645eu
1600-1625	Netherlands, Radio	9890as	12075as 15590as			15595eu		
1600-1650 occsnal	New Zealand, R NZ Intl	6100va		1630-1700	Austria, R Austria Intl	6155va	13730va	15240va 17560va
1600-1700 vl	Nigeria, Radio/Ibadan	6050do		1630-1657	Canada, R Canada Intl	6140as	7150as	
1600-1700 vl	Nigeria, Radio/Kaduna	4770do		1630-1700	Egypt, Radio Cairo	15255af		
1600-1700	Nigeria, Voice of	7255af	15120va	1630-1700 sf	Seychelles, FEBA Radio	11695as		
1600-1630	Pakistan, Radio	7230do	11570me 15319af 15465me	1630-1700	Slovakia, R Slovakia Intl	5920eu	6055eu	7345eu
		17511me	17719af	1630-1657	Vietnam, Voice of	9730eu	9840eu	
1600-1700	Palau, KHBN/Voice of Hope	9955as	9965as	1630-1700 vl	Zimbabwe, Zimbabwe BC	3306do	4828do	
1600-1700 vl	Papua New Guinea, NBC	4890do		1645-1700	Germany, Deutsche Welle	6140eu		
1600-1700	Russia, Voice of Russia WS	9675me	9730eu 12005as 12070me	1645-1700	Tajikistan, Radio	7245as		
1600-1630	S Africa, Channel Africa	6150af		1645-1700 smwf	UK, BBC World Service	11860af		
1600-1629	Seychelles, FEBA Radio	11695as		1650-1700 mtwhf	New Zealand, R NZ Intl	6145va		

## SELECTED PROGRAMS

## Sundays

- 1600 China, China Radio Intl: News. See S 0100.  
1610 China, China Radio Intl: News about China. See S 0110.  
1613 China, China Radio Intl: Sports Beat. See S 1213.  
1620 China, China Radio Intl: People in the Know. See S 1220.  
1625 China, China Radio Intl: Report on Developing Countries. See S 0120.  
1635 China, China Radio Intl: Song of the Week. See S 1235.  
1645 China, China Radio Intl: Voices from Other Lands. See S 1245.

## Monday-Friday

- 1600 China, China Radio Intl: News. See S 0100.  
1610 China, China Radio Intl: News about China. See S 0110.  
1620 China, China Radio Intl: Current Affairs. See M 1220.  
1625 China, China Radio Intl: Press Clippings. See M 1225.

## Mondays

- 1630 China, China Radio Intl: China's Open Windows. See M 1230.  
1634 China, China Radio Intl: Changzhou Reports. See M 1234.

- 1645 China, China Radio Intl: Idioms and Their Stories. See M 1245.

## Tuesdays

- 1639 China, China Radio Intl: Orient Arena. See T 1239.  
1645 China, China Radio Intl: Voices from Other Lands. See S 1245.

## Wednesdays

- 1638 China, China Radio Intl: Profile. See W 1238.  
1645 China, China Radio Intl: Learn to Speak Chinese. See W 1245.

## Thursdays

- 1635 China, China Radio Intl: Across the Land. See H 1235.  
1640 China, China Radio Intl: Focus. See H 1240.  
1644 China, China Radio Intl: Cultural Spectrum. See H 1244.

## Fridays

- 1635 China, China Radio Intl: Changzhou Reports. See M 1234.  
1639 China, China Radio Intl: Life in China. See F 1239.  
1645 China, China Radio Intl: Global Review. See F 1245.

## Saturdays

- 1600 China, China Radio Intl: News. See S 0100.  
1610 China, China Radio Intl: News about China. See S 0110.  
1615 China, China Radio Intl: Asia-Pacific News. See S 0115.

- 1620 China, China Radio Intl: Report on Developing Countries. See S 0120.  
1630 China, China Radio Intl: China Scrapbook. See S 0130.  
1635 China, China Radio Intl: Music from China. See S 0135.

## Longwave Resources

✓ **Sounds of Longwave** 60-minute Audio Cassette featuring WWVB, Omega, Whistlers, Beacons, European Broadcasters, and more! \$11.95 postpaid

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**Kevin Carey**  
P.O. Box 56, W. Bloomfield, NY 14585





## FREQUENCIES

1700-1800	Anguilla, Caribbean Beacon	11775am					1800-1900	Anguilla, Caribbean Beacon	11775am				
1700-1800 vl	Australia, ABC/Alice Spgs	2310do					1800-1900 mtwhf	Argentina, RAE	15345eu				
1700-1800 vl	Australia, ABC/Katherine	2485do					1800-1900 vl	Australia, ABC/Alice Spgs	2310do				
1700-1800 vl	Australia, ABC/Tent Creek	2325do					1800-1900 vl	Australia, ABC/Katherine	2485do				
1700-1800	Australia, Radio	595sas	6180va	9500as	9580va		1800-1900 vl	Australia, ABC/Tent Creek	2325do				
		9660va	11880va				1800-1900	Australia, Radio	6080pa	7240va	9500as	9580va	
		9165me							9660va	11880va			
1700-1730	Azerbaijan, R Dada Gorgud	4820do	4830do	7255do			1800-1900	Bangladesh, Bangla Betar	7185eu	7462eu	9548eu	15520eu	
1700-1800 vl	Botswana, Radio	9625do					1800-1900 vl	Botswana, Radio	4820do	4830do			
1700-1800 vl	Canada, CBC N Quebec Svc	6070do					1800-1900	Brazil, R Nacional Bras	15265eu				
1700-1800	Canada, CFRX Toronto	6030do					1800-1900	Canada, CFRX Toronto	6070do				
1700-1800	Canada, CFVP Calgary	6130do					1800-1900	Canada, CFVP Calgary	6030do				
1700-1800	Canada, CHNX Halifax	6160do					1800-1900	Canada, CHNX Halifax	6130do				
1700-1800	Canada, CKZN St John's	6160do					1800-1900	Canada, CKZN St John's	6160do				
1700-1800	Canada, CKZU Vancouver	5220af	7405af	9570af	11910af		1800-1900	Canada, CKZU Vancouver	6160do				
1700-1756	China, China Radio Intl	15300af	15310af				1800-1900	Costa Rica, RF Peace Intl	15050am	21460am			
		15050am	21460am				1800-1830	Egypt, Radio Cairo	15255af				
1700-1800	Costa Rica, RF Peace Intl	5930eu	21745af				1800-1900	Eqt Guinea, Radio Africa	15186af				
1700-1727	Czech Rep, R Prague Intl	15255af					1800-1900	Germany, Deutsche Welle	6140eu				
1700-1800	Egypt, Radio Cairo	15186af					1800-1900	Germany, Overcomer Ministr	3965eu				
1700-1800	Eqt Guinea, Radio Africa	15210af	17605af				1800-1830	Ghana, Ghana BC Corp	3366do	4915do			
1700-1730	France, Radio France Intl	11910eu					1800-1815	Greece, Voice of	7450eu	9425eu	17705na	17765sa	
1700-1730	Georgia, Georgian Radio	6140eu					1800-1900	Guyana, GBC/Voice of	5950do				
1700-1800	Germany, Deutsche Welle	11795va					1800-1900	India, All India Radio	7410af	9635af	9950eu	11620eu	
1700-1800 a	Germany, Good News World	3965me	13810me						11935af	13780af	15200af		
1700-1800	Germany, Overcomer Ministr	3366do	4915do				1800-1900 vl	Italy, IRRS	3985va				
1700-1800	Ghana, Ghana BC Corp	5950do					1800-1900	Kenya, Kenya BC Corp	4935do				
1700-1800	Guyana, GBC/Voice of	3985va					1800-1900	Kuwait, Radio	11990am				
1700-1800 vl	Italy, IRRS	7110eu	9535na	9825as	15355af		1800-1900	Lebanon, Voice of Hope	6280me	11515al	11530me		
1700-1800	Japan, Radio/NHK	4935do					1800-1900 vl	Lesotho, Radio	4800do				
1700-1800	Kenya, Kenya BC Corp	4800do					1800-1815	Liberia, LCN/R Liberia Int	5100do				
1700-1800 vl	Lesotho, Radio	7295do					1800-1900	Malaysia, Radio	7295do				
1700-1800	Malaysia, Radio	9465as					1800-1900	N Marianas, KFBS Saipan	9465as				
1700-1800	N Marianas, KFBS Saipan	6145va					1800-1900	N Marianas, KHBI Saipan	13820as				
1700-1800 mtwhf	New Zealand, R NZ Intl	6070do					1800-1830	Netherlands, Radio	6020af	7120af	11655af		
1700-1800 vl	Nigeria, Radio/Ibadan	4770do					1800-1850 mtwhf	New Zealand, R NZ Intl	6145va				
1700-1800 vl	Nigeria, Radio/Kaduna	3326do					1800-1900 vl	Nigeria, Radio/Ibadan	6050do				
1700-1800	Nigeria, Radio/Lagos	11600me	13580me				1800-1900 vl	Nigeria, Radio/Kaduna	4770do				
1700-1730 t	Pakistan, Radio	9955as	9965as				1800-1900	Nigeria, Radio/Lagos	3326do				
1700-1800	Palau, KHBN/Voice of Hope	6095eu	7285eu	9525eu			1800-1900 vl	Nigeria, Voice of	7255af	15120va			
1700-1800 vl	Papua New Guinea, NBC	15270eu	15380eu	17735eu	17865eu		1800-1900	North Korea, R Pyongyang	6575eu	9335eu	11710am	13760am	
1700-1800	Poland, Polish R Warsaw	7300eu	9480eu	9720eu	9775eu		1800-1900 vl	Palau, KHBN/Voice of Hope	9965as				
1700-1756	Romania, R Romania Intl	11510af	12065af				1800-1900	Papua New Guinea, NBC	4890do				
1700-1800	Russia, Voice of Russia WS	9820eu	117860af				1800-1900	Philippines, R Pilipinas	11720as	15190as	17720as		
		17860af	5980do				1800-1900	Russia, Voice of Russia WS	7300eu	7330eu	9480eu	9720eu	
		5050af	5050af						9775eu	9820eu	9865eu	11510af	
		4976do	3255af	3915as	5975as	6005af	1800-1830	S Africa, AWR Africa	5960af	6100af			
		7160as	9410eu	9510as	9630af	15420af	1800-1830	S Africa, Channel Africa	17870af				
		11995me	12095eu	15400af			1800-1900	Sierra Leone, SLBS	3316do				
		17830af	17840am				1800-1900 vl	Solomon Islands, SIBC	5020do				
		13815na	6190as	7125as	7170as		1800-1810	Somalia, Radio Mogadishu	6690af				
		15590na	9700me	9760af	15255va		1800-1900	Sudan, Radio Omdurman	9200va				
		9930as	15395as	15410af	15445af	17895af	1800-1830	Swaziland, Trans World R	9500af				
		6110as	9645as	9700me	9760af	15255va	1800-1900	Swaziland, Trans World R	3200af				
		5990as	6045as	7150as	9550as		1800-1900	Tanzania, Radio	5050af				
		9770as	11870as				1800-1900	UK, BBC World Service	6035af	7415af	9760af	9770me	
		11875na	13615na						11975af	13820as	15400af	15410af	
		9370al	9400am						15580af	17830af	17895af		
		17650af					1800-1900	USA, KAIJ Dallas TX	13815na				
		13760na	15105na				1800-1900	USA, KJES Vado NM	15385na				
		13800am					1800-1900	USA, KTVN Salt Lk City UT	15590na				
		7490na					1800-1900	USA, KWHR Naalehu HI	17510as				
		9465am					1800-1900	USA, Voice of America	6035af	7415af	9760af	9770me	
		7395na							11975af	13820as	15410af	17895af	
		18915af							15580af	15410af	17895af		
		9475na	12160na	13845na	15685na		1800-1900	USA, WEWN Birmingham AL	13820as	15410af	15580af	17895af	
		15695eu	17555eu				1800-1900	USA, WGTG McCaysville GA	9370al	9400am			
		12070eu					1800-1900	USA, WHRA Greenbush ME	9730al				
		4965do					1800-1900	USA, WHRI Noblesville IN	9495sa	13760na			
		6165do	6265do				1800-1900	USA, WINB Red Lion PA	13800am				
		3306do	4828do				1800-1900	USA, WJCR Upton KY	7490na				
		15235va	15415va	15435va			1800-1900	USA, WMLK Bethel PA	9465am				
		3200af					1800-1900	USA, WRNO New Orleans LA	7395na				
		5910eu	9925eu	11840af	13685eu		1800-1900	USA, WWSB Cypress Crk SC	15665eu	18915af			
		6080me					1800-1900	USA, WWSB Cypress Crk SC	9475na	12160na	13845na	15685na	
		11560as	11965as				1800-1845	USA, WYFR Okeechobee FL	15695eu				
		6020af	7120af	11655af			1800-1900 vl	Vanuatu, Radio	4960do				
		11720as	11720as	15190as			1800-1827	Yemen, Voice of	9730eu	9840eu			
		12130af					1800-1900	Yemen, Rep of Yemen Radio	9780do				
		6065eu					1800-1900	Zambia, Christian Voice	4965do				
		6065eu	9590eu				1800-1900	Zambia, Natl BC Corp	6165do	6265do			
		12045as	15310as				1800-1900 vl	Zimbabwe, Zimbabwe BC	3306do	4828do			
		13765af	15570af	17550af			1830-1900	Ascension Is. RTE Radio	17885af				
		7185eu	7462eu	9548eu	15520eu		1830-1900	Georgia, Georgian Radio	11760eu				
		3315do	3345do	7410af	9635af		1830-1900 s	Germany, Universal Life	11785af				
		9950eu	11620eu	11935af	13780af		1830-1900	Kiribati, Radio	9810do				
		15200af					1830-1900	Netherlands, Radio	6020af	7120af	9895af	11655af	
									13700af	17605af	21590af		
							1830-1900 w	Philippines, FEBC R Intl	9465eu				
							1830-1900	Serbia, Radio Yugoslavia	6100eu	9780eu			
							1830-1900	Slovakia, R Slovakia Intl	5920eu	6055eu	7345eu		
							1830-1900	Turkey, Voice of	9670eu	11765eu	13695eu		
							1830-1900 as	USA, Voice of America	7170af	11940af	15525af		
							1830-1900 as	USA, Voice of America	7170af	11940af	15525af		
							1851-1900 mtwhf	New Zealand, R NZ Intl	11695va				
							1855-1900 as	New Zealand, R NZ Intl	11695va				



## FREQUENCIES

[illegible]

## FREQUENCIES

2100-2200	Anguilla, Caribbean Beacon	11775am			
2100-2130 vl	Australia, ABC/Alice Spgs	2310do			
2100-2130 vl	Australia, ABC/Katherine	2485do			
2100-2200 vl	Australia, ABC/Katherine	5025do			
2100-2130 vl	Australia, ABC/Tent Creek	2325do			
2100-2130	Australia, Radio	7240pa	9500as	9580va	9660pa
		11880va	12080va	17580va	21740va
		3356do	4820do		
2100-2200 vl	Botswana, Radio	9400eu	11720eu		
2100-2200	Bulgaria, Radio	9625do			
2100-2200 vl	Canada, CBC N Quebec Svc	6070do			
2100-2200	Canada, CFRX Toronto	6030do			
2100-2200	Canada, CFVP Calgary	6130do			
2100-2200	Canada, CHNX Halifax	6160do			
2100-2200	Canada, CKZN St John's	6160do			
2100-2200	Canada, CKZU Vancouver	7235eu	11690eu	13650eu	13670eu
2100-2129	Canada, R Canada Intl	15150eu	15325eu	15470eu	17820eu
			6950eu	7590eu	9535eu
2100-2130	China, China Radio Intl	11975af	15415af	15500eu	11735af
		15050am	21460am		
2100-2200	Costa Rica, RF Peace Intl	13660eu	13750eu		
2100-2200 vl	Cuba, Radio Havana	17660eu	21455va		
2100-2200	Ecuador, HCJB	15375af			
2100-2200	Egypt, Radio Cairo	15186af			
2100-2200	Eqt Guinea, Radio Africa	9670as	9765as	9875af	11865af
2100-2145	Germany, Deutsche Welle	11915as	13780as	15135va	
		5950do			
2100-2200	Guyana, GBC/Voice of	6025eu			
2100-2130	Hungary, Radio Budapest	7150au	7410eu	9650eu	9910au
2100-2200	India, All India Radio	9950eu	11620eu	11715eu	
		9685va			
2100-2130 irreg	Iraq, Radio Iraq Intl	3985va			
2100-2200 vl	Italy, IRRS	6035pa	9725eu	17825na	21610pa
2100-2200	Japan, Radio/NHK	4885do	4935do		
2100-2130	Kenya, Kenya BC Corp	9810do			
2100-2130	Kiribati, Radio	6280me	11515al	11530me	
2100-2200	Lebanon, Voice of Hope	4800do			
2100-2200 vl	Lesotho, Radio	5100do			
2100-2115	Liberia, LCN/R Liberia Int	7295do			
2100-2200	Malaysia, Radio	3270af	3289af		
2100-2200	Namibia, NBC	17675va			
2100-2200	New Zealand, R NZ Intl	6050do			
2100-2200 vl	Nigeria, Radio/Ibadan	4770do			
2100-2200 vl	Nigeria, Radio/Kaduna	3326do			
2100-2200	Nigeria, Radio/Lagos	6575eu	9335as	11710am	13760am
2100-2200	North Korea, R Pyongyang	9985as			
2100-2200	Palau, KHBN/Voice of Hope	9675do			
2100-2200 vl	Papua New Guinea, NBC	9570eu	11725eu	11810eu	11840eu
2100-2200	Romania, R Romania Intl	15180eu			
		6100eu	6185eu		
2100-2130	Serbia, Radio Yugoslavia	3316do			
2100-2200	Sierra Leone, SLBS	5020do			
2100-2200 vl	Solomon Islands, SIBC	3970eu	6480eu	15575eu	
2100-2130	South Korea, R Korea Intl	9595af	15205eu		
2100-2200 as	Spain, R Exterior Espana	3200af			
2100-2200	Swaziland, Trans World R	12085na	13605na		
2100-2200	Syria, Radio Damascus	7170va			
2100-2130	Turkey, Voice of	3255af	3915as	3955eu	5965as
2100-2200	UK, BBC World Service	6180eu	6190af	6195va	9410eu
		5975va	6005af	6195as	12095sa
		9740pa	11835af	15400af	9560eu
2100-2200	Ukraine, R Ukraine Intl	5905eu	6020eu	6090eu	9560eu
		17715eu			
		13815na			
2100-2200	USA, KALJ Dallas TX	15590na			
2100-2200	USA, KTNB Salt Lk City UT	17510as			
2100-2200	USA, KWHR Naalehu HI	6035af	6040me	7375af	7415af
2100-2200	USA, Voice of America	9760as	11870pa	11975af	15185as
		15410af	15580af	17725af	17735as
		7415na			
2100-2200	USA, WBCQ Monticello ME	9385eu	11875na	13615na	
2100-2200	USA, WEWN Birmingham AL	9400am			
2100-2200	USA, WGTG McCaysville GA	17650af			
2100-2200	USA, WHRA Greenbush ME	5745na	9495sa		
2100-2200	USA, WHRI Noblesville IN	13790am			
2100-2200	USA, WINB Red Lion PA	7490na			
2100-2200	USA, WJCR Upton KY	9955am			
2100-2130 a	USA, WRMI/R Miami Intl	7395na			
2100-2200	USA, WRNO New Orleans LA	11815af	15665eu		
2100-2200	USA, WSHB Cypress Crk SC	9475na	12160na	13845na	15685na
2100-2200	USA, WWCR Nashville TN	15215eu	15695af	17845va	
2100-2200	USA, WYFR Okeechobee FL	4960do			
2100-2200 vl	Vanuatu, Radio	4965do			
2100-2200	Zambia, Christian Voice	6165do	6265do		
2100-2200	Zambia, Natl BC Corp	3306do	4828do		
2100-2200 vl	Zimbabwe, Zimbabwe BC	4810va	9965va		
2115-2145 mtwhfa	Armenia, Voice of	9990eu			
2115-2200	Egypt, Radio Cairo	5975ca	15390ca	17715ca	
2115-2130 mtwhf	UK, BBC Caribbean Report	5975am			
2115-2130 as	UK, BBC World Service	7160eu	9635eu		
2130-2200	Albania, R Tirana Intl	4910do			
2130-2200 vl	Australia, ABC/Tent Creek	7240pa	9660pa	11880va	12080va
2130-2200	Australia, Radio	17580va	21740va		

2130-2200	Austria, R Austria Intl	6155eu			
2130-2200 smtwha	Austria, R Austria Intl	5945eu	13730af		
2130-2157	Czech Rep, R Prague Intl	11600va	15545af		
2130-2200	Guam, AWR/KSDA	15550as			
2130-2200	Hungary, Radio Budapest	3975eu			
2130-2200	Iran, VOIRI	11740as	13720as	13745as	
2130-2155	Moldova, R Moldova Intl	7520eu			
2130-2200	South Korea, R Korea Intl	15575eu			
2130-2200	Sweden, Radio	6065eu	9430eu		
2130-2145 tf	UK, BBC Calling Falklands	11680sa			
2130-2200	USA, Voice of America	6040me	9535af	9705as	11870pa
		15185as	17735as		
2130-2200 smtwhf	USA, Voice of America	6035af	7375af	7415af	11975af
		15410af	15445af	15580af	17725af
2130-2200	Uzbekistan, R Tashkent	7105eu	9540eu		

## 2200 UTC

2200-2300	Anguilla, Caribbean Beacon	6090am			
2200-2300 vl	Australia, ABC/Katherine	5025do			
2200-2300 vl	Australia, ABC/Tent Creek	4910do			
2200-2300	Australia, Radio	17580va	17795va	21740va	
2200-2300	Canada, CBC N Quebec Svc	9625do			
2200-2300	Canada, CFRX Toronto	6070do			
2200-2300	Canada, CFVP Calgary	6030do			
2200-2300	Canada, CHNX Halifax	6130do			
2200-2300	Canada, CKZN St John's	6160do			
2200-2300	Canada, CKZU Vancouver	6160do			
2200-2229	Canada, R Canada Intl	5960na	9755na	11705as	13670am
		15305am			
		9880eu			
2200-2256	China, China Radio Intl	15050am	21460am		
2200-2300	Costa Rica, RF Peace Intl	9990eu			
2200-2245	Egypt, Radio Cairo	15186af			
2200-2300	Eqt Guinea, Radio Africa	3366do	4915do		
2200-2215	Ghana, Ghana BC Corp	5950do			
2200-2300	Guyana, GBC/Voice of	7150au	7410eu	9650eu	9910au
2200-2230	India, All India Radio	9950eu	11620eu	11715eu	
		11740as	13720as	13745as	
2200-2225	Iran, VOIRI	9675as	11900as	15240as	
2200-2225	Italy, RAI Intl	5100do			
2200-2215	Liberia, LCN/R Liberia Int	7295do			
2200-2300	Malaysia, Radio	9705am			
2200-2230	Mexico, Radio Mexico Intl	3270af	3289af		
2200-2300	Namibia, NBC	17675va			
2200-2300	New Zealand, R NZ Intl	6050do			
2200-2300 vl	Nigeria, Radio/Ibadan	4770do			
2200-2300 vl	Nigeria, Radio/Kaduna	3326do			
2200-2300	Nigeria, Radio/Lagos	9985as			
2200-2300 vl	Palau, KHBN/Voice of Hope	9675do			
2200-2300	Papua New Guinea, NBC	3316do			
2200-2300	Sierra Leone, SLBS	5020do			
2200-2300 vl	Solomon Islands, SIBC	3200af			
2200-2215	Swaziland, Trans World R	12085eu	13605na		
2200-2205	Syria, Radio Damascus	11565eu	15600eu		
2200-2300	Taiwan, Radio Taipei Intl	7190eu	13640na		
2200-2300	Turkey, Voice of	5965as	5975am	6175am	6195va
2200-2300	UK, BBC World Service	9590am	9660as	9890as	9915sa
		7110as	11835af	11955as	12080pa
		13815na			
2200-2300	USA, KALJ Dallas TX	15590na			
2200-2300	USA, KTNB Salt Lk City UT	17510as			
2200-2300	USA, KWHR Naalehu HI	6035af	7215as	7340af	7375as
2200-2230 mtwhf	USA, Voice of America	9705as	9770as	11760as	11975af
		7415af	15290as	15305as	17735as
		15185as			
2200-2300	USA, WBCQ Monticello ME	7415na			
2200-2300	USA, WEWN Birmingham AL	9385eu	13615na		
2200-2300	USA, WGTG McCaysville GA	6890am	9400am		
2200-2300	USA, WHRA Greenbush ME	17650af			
2200-2300	USA, WHRI Noblesville IN	5745na	9495sa		
2200-2300	USA, WINB Red Lion PA	13790am			
2200-2300	USA, WJCR Upton KY	7490na			
2200-2230 a	USA, WRMI/R Miami Intl	9955am			
2200-2300	USA, WRNO New Orleans LA	7395na			
2200-2300	USA, WSHB Cypress Crk SC	13770eu	15285sa		
2200-2300	USA, WWCR Nashville TN	5070na	7435na	9475na	13845na
2200-2245	USA, WYFR Okeechobee FL	11740na	15215af	17845va	
2200-2300 vl	Vanuatu, Radio	4960do			
2200-2210	Zambia, Natl BC Corp	6165do	6265do		
2229-2300	Canada, R Canada Intl	5960na	9755na	13670na	
2230-2256	Belgium, R Vlaanderen Intl	15565na			
2230-2300	Cuba, Radio Havana	9550am			
2230-2257	Czech Rep, R Prague Intl	11600na	15545na		
2230-2300	USA, Voice of America	7215as	9705as	9770as	11760as
		15290as	15305as	17735as	17820as
		15185as			
2245-2300	India, All India Radio	7410as	9705as	9950as	11620as
		13625as			
2245-2300	USA, WYFR Okeechobee FL	11740na			
2245-2300	Vatican City, Vatican R	9600as	11830as		





## ELF/VLF/LF Propagation Modes - Part 3

**D**uring DXpeditions during the winter of 1998-99, we had the pleasure of hearing three lowfers located between 300 and 350 miles away from the receiving site. There was one very interesting common condition to these intercepts, the three stations were all in the same area of the US, and a large portion of the path from transmitter to receiver was over water! Remember this fact, because path over water seems to be a common theme for other interesting intercepts discussed later.

During one listening night in February 1999, we heard the Icelandic station, the BBC, Algeria and NDBs (nondirectional beacons) located in Venezuela, the Dominican Republic and Puerto Rico. These NDBs do not operate with the same high power as the European broadcasters do; NDB stations would use power between 1 and 5 kW. Again, in all these NDB intercepts, the largest portion of the transmission path was over water!

The theory for signals in the 10 to 500 kHz range presumes that one type of propagation mode is from a direct one-hop skywave transmitted at a very low radiation angle from the transmitting antenna. A vertical antenna can launch its signals at very low radiation angle and most transmitters use vertical polarization at those frequencies. But, if we are looking at one hop using the ionosphere, what is the difference between one-hop HF and one-hop ELF/VLF/LF propagation modes?

It is believed that waves at these low and extremely low frequencies are not refracted like the HF waves from the "F" layer, but are actually reflected from the bottom of the "D" layer as from a very clean mirror. The D layer is always present. At night this layer becomes very diffuse but can still act as an efficient mirror for the low frequencies. In fact, it is postulated that the more diffusion there is in the D layer at night, the better mirror it becomes! This will partly explain the increase in signal quality and strength at night, when the noise level also tends to decrease.

If one ionospheric bounce doesn't account for the signal reaching the receiving site, we now have to consider at least one reflection on the ground/water to launch a second bounce. At ELF/VLF/LF frequencies the earth's surface — especially water — has a very low loss coefficient, so that a signal can "bounce" around, losing very little energy on its way back to the D Layer. This would explain the unusual reception from the lowfers, the Caribbean NDBs and the European broadcasters discussed above: the path of the signals from the transmitters to the DXpedition site was significantly over water, thus very little loss occurred in the signal strength.

### OPTIMUM WORKING FREQUENCIES (MHz)

For the Period 15 September to 14 October 1999 Flux=202 SSN=157

Predictions prepared using ASAPS for Windows®

UTC	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
TO/FROM US WEST COAST																								
SOUTH AMERICA	29	27	25	21	18	16	14	14	14	13	13	12	12	15	23	28	29	29	29	30	30	30	31	31
WESTERN EUROPE	10	10	9	9	9	9	10	10	9	9	*	*	*	*	12	14	16	17	17	16	15	14	12	11
EASTERN EUROPE (P)	10	10	10	11	12	13	11	11	*	*	*	*	*	11	13	15	16	17	17	14	*	*	*	*
MEDITERRANEAN	18	18	17	17	15	14	13	12	*	*	*	*	*	*	15	17	19	20	22	23	23	21	19	18
MIDDLE EAST (P)	14	13	13	17	15	14	*	*	*	*	*	*	*	12	13	15	17	18	16	15	14	13	14	14
CENTRAL AFRICA	25	24	23	20	18	15	14	13	*	*	*	*	*	*	18	21	22	24	25	25	26	26	27	27
SOUTH AFRICA	22	20	18	16	14	15	14	14	13	*	*	*	*	16	19	23	24	26	27	27	27	28	26	23
SOUTH EAST ASIA (P)	24	24	23	21	19	16	*	*	*	*	10	10	10	10	11	12	15	17	18	20	20	17	16	24
FAR EAST	23	23	23	21	19	16	14	12	11	10	9	10	10	10	10	12	13	13	13	13	16	20	22	23
AUSTRALIA	33	32	32	31	27	23	20	18	16	15	15	15	14	13	13	16	18	18	17	18	25	31	33	34
TO/FROM US MIDWEST																								
SOUTH AMERICA	25	23	19	17	15	13	13	13	13	12	11	12	14	21	26	27	27	27	27	27	27	28	28	28
WESTERN EUROPE	12	11	11	11	11	11	11	11	11	11	11	12	13	16	18	19	20	20	19	19	18	16	14	13
EASTERN EUROPE	10	10	10	10	11	12	11	11	*	*	*	*	*	14	16	17	19	19	17	15	13	*	11	10
MEDITERRANEAN	18	18	17	15	14	13	12	12	*	*	*	*	*	17	19	20	22	23	23	23	23	22	20	19
MIDDLE EAST (P)	14	14	14	15	14	13	12	*	*	*	*	*	13	15	17	19	20	20	18	16	15	14	14	14
CENTRAL AFRICA	26	23	20	17	16	15	15	14	14	*	*	*	17	22	24	25	27	27	27	26	28	28	28	27
SOUTH AFRICA	22	20	18	16	14	16	15	15	14	14	*	15	19	22	25	25	26	28	27	27	28	29	26	23
SOUTH EAST ASIA (P)	23	21	19	17	14	*	*	*	*	*	11	11	11	12	14	16	17	19	21	21	19	17	16	22
FAR EAST	23	22	20	18	15	13	12	11	10	10	10	10	10	11	13	14	14	14	13	14	16	19	22	23
AUSTRALIA	30	29	27	24	20	17	15	14	14	13	13	13	13	14	17	19	18	17	17	18	25	28	29	30
TO/FROM US EAST COAST																								
SOUTH AMERICA	20	18	16	15	14	13	13	12	12	11	10	12	19	23	23	24	24	24	24	24	24	24	24	22
WESTERN EUROPE	12	12	11	11	11	10	10	11	12	12	12	15	19	21	21	21	21	21	21	20	18	16	14	13
EASTERN EUROPE	10	10	10	10	11	13	12	12	12	12	12	15	18	21	21	21	20	19	18	15	14	12	11	11
MEDITERRANEAN	19	18	18	16	15	15	14	14	13	13	14	18	22	23	24	25	26	25	25	26	23	22	20	19
MIDDLE EAST (P)	15	15	14	16	15	14	13	13	*	*	*	16	20	22	23	25	26	23	21	18	17	16	16	15
CENTRAL AFRICA	24	23	21	19	18	17	17	16	15	14	18	27	28	29	29	30	30	30	29	27	28	30	29	28
SOUTH AFRICA	22	20	18	16	14	16	17	16	14	*	17	26	31	32	32	32	32	31	32	32	32	30	26	23
SOUTH EAST ASIA (P)	20	18	16	15	*	*	*	*	*	*	12	12	15	17	19	21	23	22	21	20	19	17	15	19
FAR EAST	23	21	18	16	15	14	13	12	12	12	12	12	13	15	15	14	14	14	14	14	16	19	23	24
AUSTRALIA	31	27	23	20	17	16	15	15	15	15	14	14	17	20	19	19	17	17	16	18	24	29	31	31

\* Unfavorable conditions: Search around the last listed frequency for activity.

(P) denotes circuit across polar auroral zone; reception may be poor during ionospheric disturbances.

In the 10 to 30 kHz range, it is now believed that the reflecting bottom of the D layer (discussed above) and the ground surface below form a conduit (waveguide) that will guide the signal without introducing much loss from the transmitter to the receiver. (Remember the column on atmospheric VHF ducting, *MT* March 1999). This theory would partially explain why signals in that slice of the spectrum are heard equally well day and night: the quality and the carrying capacity of the ELF waveguide does not materially change from day

to night.

Digging for signals in the 10 to 500 kHz range is a fascinating aspect of our hobby that is too often forgotten. Larry Van Horn says you don't have to wait till winter for the noise to abate — he's been "having a ball down there this summer, due to a different pattern of light/darkness." Maybe this Christmas you will be rewarded by hearing Christmas songs in Icelandic on 189 kHz — now *that* is an unforgettable memory!

## Music on Shortwave – *Evening Prime*

**T**he watchwords in commercial FM radio these days are “less talk, more music.” Given limited column space and the breadth of our subject, they’ll be ours too.

To briefly explain what we're doing: many of you have been asking for a comprehensive listing of music programs on shortwave. This is the first of three consecutive columns devoted

to this topic. This month, it's evening prime time across the continent; next month, morning prime; in November, music programs from non-English language services.

It would be impossible to produce a listing including every music program in every language on every station, right? But that doesn't mean we can't try! So, I invite you to start shar-

ing with other listeners the musical discoveries you make while scanning the bands. Just drop me a note or e-mail what you've heard and I'll pass the information along. Material received by October 10 will be included in the December issue.

Until October, good listening!

*[Days and times are UT. Day and station abbreviations are the same as those used in MT's Shortwave Guide. Use the Guide also to locate frequencies for the listed programs. Be sure to try all the frequencies listed to find which one gives best results for your listening location. "D" in the Day column means "Daily"; \*means one hour later during winter, except New Zealand one hour earlier. BBC listings are for Europe/Americas stream only. Programs and times are subject to change.]*

UT	Station	Day	Program								
2200	USA,WBCQ	A	Fred Flintstone Music Show (oldies)	USA,WHRI1	S/T-A	indigenous Christian/country/gospel (9495kHz.)	0130	Cuba,RadioHavana	M	Top Tens (Cuban hit music)[1st/3rd M]	
2200*	RMexicoIntl	A	Regional Roots & Rhythms (Mexican)	2330	UK,BBC	A	Vintage Chart Show (oldies)	HCJB	A	The Jazz Place (Cuban jazz)[2nd/4th M]	
	USA,WHRI1	D	Christian/country/gospel (9495kHz.)	USA,WBCQ	A	A Different Kind of Oldies Show				Musica del Ecuador (Andean folk)	
2205*	USA,WHRA	M-H/A	Christian/country/gospel	2330*	RMexicoIntl	MWFA	Mexican traditional and contemporary	0130*	RadioMexicoIntl	D	Mexican traditional and contemporary
	USA,WHRI2	S	Christian/country/gospel (5745kHz.)	2335	Romania	S	Skylark (Romanian folk)	0132*	Russia,Voiceof	T	Folk Box (traditional)
2215	Taiwan,RTaipeiIntl	M	Jade Bells & Bamboo Pipes (traditional Chinese)			M	Romanian Hits (pop/rock)			H	Jazz Show
2225	India,AllIndiaRadio	D	Film Tune (Indian cinema)	2340		W	Romanian Musicians Skylark (Romanian folk)			F	Russian Musical Highlights of the 20th Century
2230	Belgium,RVI	A	Music from Flanders (Flemish)			F	Romanian Folk Music at its Best	0135	RExteriorEspana	S	Yours for the Asking (listener requests)
	RFPeaceIntl	W	Oyate Ta Olowan (indigenous)	0000	RFPeaceIntl	M	Music Medicine (new age/folk)	0145	UK,BBC	F	Poporama (Spanish pop)
	UK,BBC	M	UK Top 20 (pop/rock)	0000*	USA,WBCQ	M	Radio New York International (oldies)	0200	Ecuador,HCJB	H	Performance (classical)
		W	Jazzmatazz	0005	RPrague	S	Saturday Music (classical/folk/jazz)	0205	Australia,Radio	S	Rock Solid (Christian contemporary)
		H	Contemporary music feature	0005*	CBCNQuebecSvc	S	Finkelman's 45s (oldies)	0205*	CBCNQuebecSvc	S	Fine Music Australia (Australian classical)
		F	John Peel (alternative/avante-garde)			M	On Stage (classical)		USA,WHRI1	M-A	A Propos (Quebeois folk/contemporary)
2230*	CBCNQuebecSvc	A	Sound Advice (classical)	0020*	RUkraineIntl	M	Music in Nunavik (Inuit music)	0206*	NewZealand	M-F	Christian/country/gospel (7315kHz. to 0500*)
	RMexicoIntl	D	Mexican traditional and contemporary	0022	RExteriorEspana	M	Music from Ukraine (classical/folk/jazz)	0208*	Canada,RCI	S	Wayne's Music (varied)
	USA,WHRI2	A	World Harvest Country Style (5745kHz.)	0029		T-A	Spanish Folk	0210	SouthKorea	M	Vinyl Cafe (eclectic/diversified)
	USA,WRNO	S	Music & the Spoken Word (Mormon Tabernacle Choir)	0030*	RadioMexicoIntl	S/M	Mexican traditional and contemporary	0215		S	Echoes of Korean Music (traditional)
2235	RPrague	A	Saturday Music (classical/folk/jazz)	0035	RExteriorEspana	S	Poporama (Spanish pop)	0215	Taiwan,RTaipeiIntl	M	Musical Trap (Korean pop)
2240	Australia,Radio	S	Music Deli (diverse global)		RAustrialIntl	S	Music from Austria (varied)				Jade Bells & Bamboo Pipes (traditional Chinese)
		M	Australian Music Show	0053	Netherlands,Radio	W	Music 52/15 (world/folk/indigenous)	0230	Ecuador,HCJB	F	Inspirational Classics (classical)
		T	Presenter's Pleasure	0100	RFPeaceIntl	S	Oyate Ta Olowan (indigenous)			A	Walkin' in the Sunshine (country)
		W	Blacktracker (Aboriginal)	0105	Australia,Radio	A	Oz Sounds (Australian)	0230	Sweden,Radio	M	Sounds Nordic (Swedish pop/rock)[2nd/4thM]
		H	Australian Country Style	0105*	USA,WHRI	M	Saturday Music (classical/folk/jazz)	0230*	USA,WRNO	M	Jazz :30 (dixieland)
2254	Belgium,RVI	S-F	Soundbox (Flemish rock)	0105*	USA,WHRI	M	Christian/country/gospel (7315kHz. to 0330)		RadioMexicoIntl	D	Mexican traditional and contemporary
2300*	RMexicoIntl	M/F	Sounds of Mexico (Mexican music)	0106*	NewZealand	M-F	Cadenza (light classical)	0232*	Russia,Voiceof	S	Songs from Russia (traditional/novelities)
		W	Regional Roots & Rhythms (Mexican)			A	Home Grown (NZ music)			W	Russian Musical Highlights of the 20th Century
2305	UK,BBC	S	Wright Around the World (pop/rock requests)	0110*	Hungary	M	Jazz, Classical or Folk	0235	RAustrialIntl	S	Music from Austria (varied)
2305*	CBCNQuebecSvc	S	Roots and Wings (world/folk)	0111*	Russia,Voiceof	S/M	Music and Musicians (Russian)		Cuba,RadioHavana	M	From Havana (Cuban)
	Canada,RCI	S	Roots and Wings (world/folk)	0115	Switzerland	S	Sounds Good (Swiss folk)[3rd/5th S]		Romania	M	Skylark (Romanian folk)
		A	Global Village (world/	0120	Vietnam,Voiceof	S	Vietnamese			T	Romanian Hits (Romanian pop/rock)
				0122	RExteriorEspana	M	Spanish Folk			H	Romanian Musicians
				0129		T-A	Spanish Pop	0240		F	Skylark (Romanian)

# SATELLITE RADIO GUIDE



## AUDIO SUBCARRIERS

By Robert Smathers, roberts@nmia.com

Audio frequencies in MHz. All satellite/transponder coordinates are C-band unless otherwise noted.

DS=Discrete Stereo

### Classical Music

SuperAudio-Classical Collections	G5, 21	6.30/6.48 (DS)
WCPE-FM (89.7)		
Raleigh/Durham/Chapel Hill, NC	G5, 7	5.58/6.12 (DS)
WFMT-FM (98.7) Chicago, IL—Fine Arts	G5, 7	6.30/6.48 (DS)
WQXR-FM (96.3) New York, NY	S4, 14	6.20/6.80 (DS)

### Satellite Computer Services

Superguide	G5, 7	5.48
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### Contemporary Music

SuperAudio—Light and Lively Rock	G5, 21	5.96, 6.12 (DS)
WBES-FM (94.5) "Charleston's Soft Rock B94.5"		
Charleston, WV	GE1, 12	5.90
WPHZ-FM (96.9) Bremen, IN (South Bend market)	G6, 15	6.48, 7.30 (DS)

### Country Music

SuperAudio—American Country Favorites	G5, 21	5.04/7.74 (DS)
WSM-AM (650) Nashville, TN	C4, 24	7.38

### Easy Listening Music

FCC mandated safe-harbor program audio-easy listening music	G3R, 9	6.80
	G5, 2	6.80
SuperAudio—Soft Sounds	G5, 21	5.58/5.76 (DS)
United Video—easy listening music	C4, 8	5.895 (N)

### Foreign Language Programming

Antenna Radio (Greek)	S4, 14	7.80
Arab Network of America radio network	GE2, 22	5.80
La Cadena CNN Radio Noticias (CNN Radio News in Spanish)	G5, 17	7.56
Radio Sedaye Iran	GE3, 15	6.16
SRC AM Network	E2, 1	7.38
SRC FM Network	E2, 1	5.41/5.58 (DS)
WCRP-FM (88.1) Guyama, PR—religious (Spanish)	G6, 6	6.53

### Jazz Music

KLON-FM (88.1) Long Beach, CA., ID-Jazz-88	G5, 2	5.58/5.76 (DS)
Superaudio—New Age of Jazz	G5, 21	7.38/7.56 (DS)

### News and Information Programming

Broadcast News	E2, 1	5.78
Cable Radio Network	G5, 2	8.30
	G7, 6	7.30
CNN Headline News	G5, 22	7.58
CNN Radio News	G5, 5	7.58
	G5, 5	6.30
	G5, 22	6.30
USA Radio Network—news, talk and information	GE3, 13	5.01, 5.20
WCBS-AM (880) New York, NY—news	T4, 10	7.38

### Religious Programming

Ambassador Inspirational Radio	GE3, 15	5.96, 6.48
Brother Staire Radio	G5, 6	6.48
KHCB-FM (105.7) Houston, TX	GE1, 9	7.28
KHVN-AM (1240) Charlotte, NC	G1R, 17	7.92
KMUS-AM (1380) Muskogee, OK	G1R, 24	5.80
LDS Radio Network	C1, 6	5.58
Radio 74 International	G3R, 23	5.58
Salem Radio Network	GE3, 17	5.01, 5.20

Trinity Broadcasting radio service	G5, 3	5.58/5.78 (DS)
WROL-AM (950) Boston, MA (occasional Spanish)	GE3, 3	6.20

### Rock Music

SuperAudio—Classic Hits—oldies	G5, 21	8.10/8.30 (DS)
SuperAudio—Prime Demo—mellow rock	G5, 21	5.22/5.40 (DS)

### Shortwave Broadcasters via Satellite

C-SPAN Audio 1: Various shortwave broadcasters	C3, 7	5.20
C-SPAN Audio 2:		
British Broadcasting Corporation (BBC)	C3, 7	5.41
Deutsche Welle	GE1, 22	7.38, 7.56, 7.74, 7.92
RAI Satelradio Italy (Italian)	G7, 14	7.38
WEWN—Worldwide Catholic Radio, Vandiver, AL	G1R, 11	5.40, 7.20, 7.38 (English), 5.58 (Spanish)
WHRA Africa/Middle East—		
World Harvest Radio, South Bend, IN	G6, 15	7.82
WHRI Americas—		
World Harvest Radio, South Bend, IN	G6, 15	7.46
WHRI Europe—		
World Harvest Radio, South Bend, IN	G6, 15	7.55
KWHR Asia—		
World Harvest Radio, South Bend, IN	G6, 15	7.64
KWHR South Pacific—		
World Harvest Radio, South Bend, IN	G6, 15	7.73
World Radio Network: WRN1 North America	G5, 6	6.80
World Radio Network: WRN2 North America	G5, 6	6.20 (Multi-lingual)

### Specialty Formats

Aries In Touch Reading Service	C4, 10	7.87
Colorado Talking Book Network	C1, 3	5.60
SuperAudio—Big Bands (Sun 0200-0600 UTC)	G5, 21	5.58/5.76 (DS)
Weather Channel—background music	C3, 13	7.78
Wisdom Radio Network	GE1, 12	7.10
	GE1, 12	7.92
Yesterday USA—nostalgia radio	G5, 7	6.80

### Talk Programming

American Freedom radio network	S4, 19	5.80
American Urban Radio Network	GE3, 9	6.30, 6.48
Amerinet Broadcasting	G1R, 17	5.58
Business Radio Network	C4, 10	8.06
For the People radio network	C1, 6	7.50
Friday Night Live (Fridays)	GE1, 12	5.70 (N)
Genesis Communications Network	G1R, 17	8.10
Orbit 7 Radio Network	C1, 14	7.48
Radio America Network	C1, 2	5.58
Republic Radio International	G7, 14	7.70
Talk America Radio Network #1—talk programs	GE3, 9	6.80
Talk America Radio Network #2—talk programs	GE3, 9	5.41
Talk Radio Network (TRN)	C1, 14	5.80
TVRO.NET (featuring Keith Lamonica)	S4, 16	5.80
United Broadcasting Network	C1, 2	7.50
W0KIE Radio Network	GE1, 12	5.70 (N)
WWTN-FM (99.7) Manchester, TN—news and talk	G5, 18	7.38

### Variety Programming

CBM-FM (88.5)		
Montreal, PQ Canada—variety/fine arts	E2, 1	6.12
KBVA-FM (106.5)		
Bella Vista, AR, ID—Variety 106.5	G6, 6	5.58/5.76 (DS)
WNMX-FM (106.1) "Mix 106" Waxhaw, NC	G1R, 17	7.927
WUSF-FM (89.7)		
Tampa-St. Petersburg, FL (Public Radio)	C4, 10	8.26

# SATELLITE RADIO GUIDE



## AUDIO SUBCARRIERS / SCPC SERVICES

### FM SQUARED (FM<sup>2</sup>) AUDIO GUIDE

#### GE-3 Transponder 13 (C-band)

Ambassador Inspirational Radio	
	4.47 and 4.65 MHz
Blank audio carriers	1.05 and 3.57 MHz
Focus on the Family	1.23 and 1.41 MHz
Information Radio Network	3.39 MHz
International Broadcasting Network (IBN)	4.83 MHz
USA Radio Network	4.30, 5.01 and 5.20 MHz
Various Religious Programs (no common ministry)	.33 and 3.75 MHz
VCY/America (channel 1)	.51 MHz
VCY/America (channel 2)	.78 MHz

#### GE-3 Transponder 17 (C-band)

Blank audio carriers	1.28 and 3.57 MHz
Data Transmission	.80, 1.14, 1.21, and 2.06 MHz
Focus on the Family	1.05 and 1.40 MHz
In-Touch Ministries	4.47 MHz
Salem Satellite Network	4.65, 4.84, 5.01, and 5.20 MHz
SRN News	.33 MHz
USA Radio Network	1.77 MHz

#### Galaxy 3R Transponder 3 (Ku-band)

Blank Audio Carriers	.15, 2.06, 3.14, and 3.25 MHz
Data transmissions	.06, .62, 2.93, 3.07 and 3.17 MHz
AP Network News	3.53 MHz
In-Store audio network ads (various companies)	.62, .71, .81, .91, .98, 1.05, 1.15, 1.26, 3.44, 3.62, 3.70, 3.80, 3.88, 3.97 and 4.20 MHz
Muzak Services	.27, .39, .51, 1.36, 1.48, 1.60, 1.72, 1.84, 1.96, 2.19, 2.31, 2.44, 2.56, 2.68, 2.80, 3.34, 4.08, 4.34, and 4.45 MHz

#### Galaxy 3R Transponder 16 (Ku-band)

Data transmissions	.64, 1.95, 2.18, 2.40, 2.52, 2.73, 2.82, 2.92, 3.20, 3.24, 3.47, 3.73, 3.97, 4.14, and 4.24 MHz
In-Store audio networks	.15, .27, .39, .99, 1.11, 1.59, 1.71, and 1.83 MHz

#### Telstar 5 Transponder 28 (Ku-band)

Data Transmissions	.06, .15, .23, .30, .35, .38, .47, .57, .65, .71, .74, .76, .84, .89, .93, .96, 1.05, 1.12, and 1.22 MHz
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## Single Channel Per Carrier (SCPC) Services

By Robert Smathers  
roberts@nmia.com

An SCPC transmitted signal is transmitted with its own carrier, thus eliminating the need for a video carrier to be present. Dozens of SCPC signals can be transmitted on a single transponder. In addition to a standard TVRO satellite system, an additional receiver is required to receive SCPC signals.

The frequency in the first column is the 1st IF (typical LNB frequency) and the second column frequency (in parentheses) is the 2nd IF (commercial receiver readout) for the SCPC listing. Both frequencies are in MHz.

#### GE-2 Transponder-Vertical 13 (C-band)

1179.40 (80.6)	NASA space shuttle audio
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#### GE-3 Transponder-Horizontal 13 (C-band)

1207.90 (52.1)	Wisconsin Voice of Christian Youth (VCY) America Radio Network—religious programming
1204.25 (55.75)	Wisconsin Voice of Christian Youth (VCY) America Radio Network—religious programming
1204.00 (56.0)	SRN (Salem Radio Network) News
1201.50 (58.5)	Wisconsin Voice of Christian Youth (VCY) America Radio Network—religious programming

1201.30 (58.7)	Wisconsin Voice of Christian Youth (VCY) America Radio Network—religious programming
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#### Galaxy 6 Transponder 1-Horizontal (C-band)

1443.80 (56.2)	Voice of Free China (International Shortwave Broadcaster) Taipei, Taiwan
1443.60 (56.4)	KBLA-AM (1580) Santa Monica, CA—Radio Korea
1443.40 (56.6)	Voice of Free China (International Shortwave Broadcaster) Taipei, Taiwan
1438.30 (61.7)	WWRV-AM (1330) New York, NY—Spanish religious programming and music, ID—Radio Vision Christiana de Internacional
1436.50 (63.5)	West Virginia Metro News

#### Galaxy 6 Transponder 3-Horizontal (C-band)

1404.80 (55.2)	KOA-AM (850)/KTLK-AM (760) Denver, Colo—news and talk radio/Rockies MLB radio network
1404.60 (55.4)	WGN-AM (720) Chicago, IL—news and talk radio/Cubs MLB radio network
1404.40 (55.6)	Illinois News Network/W MVP-AM (1000) Chicago, IL—"ESPN Radio 1000"/White Sox MLB radio network



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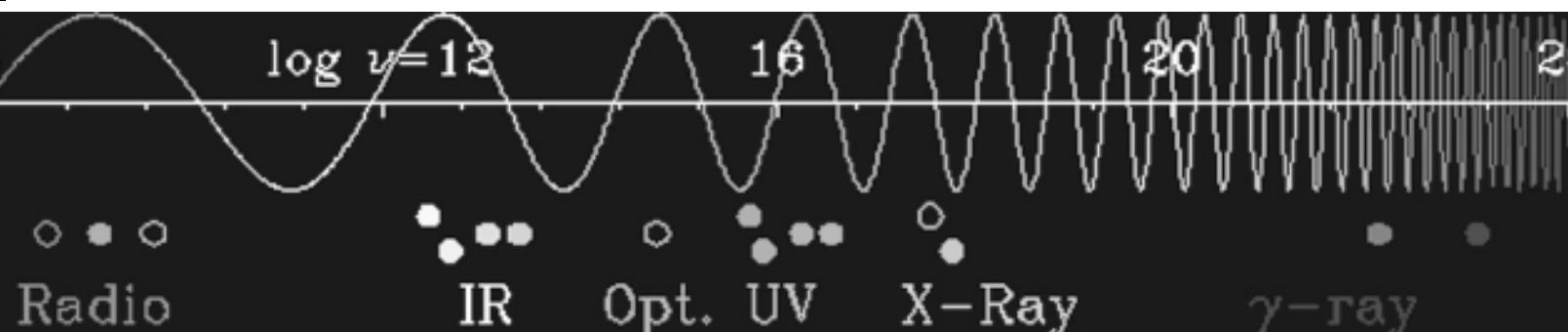




## SINGLE CHANNEL PER CARRIER (SCPC) SERVICES

1404.20 (55.8)	Tribune Radio Networks/Wisconsin Radio Network	1382.60 (77.4)	Soldiers Radio Satellite (SRS) network—U.S. Army information and entertainment radio/Army college sports	1005.50 (54.5)	Canadian Broadcasting Corporation (CBC) Radio-North (Yukon) service
1402.90 (57.1)	USA Radio Network	1382.30 (77.7)	Motor Racing Network (occasional audio) NASCAR racing	<b>Solidaridad 1 Transponder 1-Vertical (C-band)</b>	
1402.70 (57.3)	WLAC-AM (1510) Nashville, TN—news and talk/ <i>Road Gang</i> trucker program (overnight)	1382.00 (78.0)	Occasional audio	1447.90 (52.1)	Antenna Radio Noticias/Dodgers Radio Network (Spanish language)
1402.20 (57.8)	NorthWest Ag News Network - Agriculture info for the Pacific Northwest	1381.60 (78.4)	KEX-AM (1190) Portland, OR—news and talk radio/Forest Dragons football radio network	1447.60 (52.4)	Antenna Radio Noticias
1402.00 (58.0)	Occasional audio	1381.40 (78.6)	Occasional audio	1447.20 (52.8)	La Grande Cadena Raza
1401.80 (58.2)	For the People Radio Network with Chuck Harder - talk radio format	1381.20 (78.8)	KJR-AM (950) Seattle, WA— sports talk radio	1447.00 (53.0)	XEMZA-AM 560, Manzanillo, Mexico
1401.50 (58.5)	Agrinet Ag info/USA Radio Network	1377.10 (82.9)	In-Touch—reading service	<b>Anik E1 Transponder 21-Horizontal (C-band)</b>	
1399.00 (61.0)	Sports Byline USA/Sports Byline Weekend	1376.00 (84.0)	Kansas Audio Reader Network—reading service	1036.70 (63.3)	In-store music
1398.80 (61.2)	Talk Radio Network (TRN) - talk radio format	<b>Galaxy 6 Transponder 4-Vertical (C-band)</b>		1037.00 (63.0)	In-store music
1398.50 (61.5)	Occasional audio	1376.00 (64.0)	Data Transmissions	1037.50 (62.5)	In-store music
1398.30 (61.7)	WSB-AM (750) Atlanta, GA— news/talk/Atlanta Braves MLB radio network	<b>Galaxy 6 Transponder 6-Vertical (C-band)</b>		<b>SBS5 Transponder 2-Horizontal (Ku-band)</b>	
1398.00 (62.0)	Occasional audio	1347.00 (53.0)	WCRP-FM (88.1) Guayama, PR—Spanish language religious programming	1013.60 (80.4)	Wal-Mart in-store network
1397.80 (62.2)	Occasional audio	<b>Anik E2 Transponder 1-Horizontal (C-band)</b>		1013.20 (80.8)	Wal-Mart in-store network
1397.50 (62.5)	Minnesota Talking Book Radio Network—reading service for the blind	1446.00 (54.0)	Canadian Broadcasting Corporation (CBC) Radio-North (Quebec) service	1012.80 (81.2)	Sam's Wholesale Club in-store network
1397.10 (62.9)	Wisconsin Radio Network/Wisconsin college sports	<b>Anik E2 Transponder 7-Horizontal (C-band)</b>		1004.50 (89.5)	Wal-Mart in-store network
1396.90 (63.1)	KRLD-AM (1080), Dallas, Ft. Worth, TX - Texas State Network/Rangers MLB radio network	1326.00 (54.0)	Canadian Broadcasting Corporation (CBC) Radio-North (Eastern Arctic) service	1004.00 (90.0)	Wal-Mart in-store network
1396.70 (63.3)	Radio America Network/Business News Network	<b>Anik E2 Transponder 13-Horizontal (C-band)</b>		1003.60 (90.4)	Sam's Wholesale Club in-store network
1396.40 (63.4)	Georgia News Network (GNN)—network news feeds	1206.00 (54.0)	Canadian Broadcasting Corporation (CBC) Radio-North (MacKenzie) service	1003.20 (90.8)	Wal-Mart in-store network
1396.00 (64.0)	WHO-AM (1040) Des Moines, IA—talk radio/Iowa News Network	<b>Anik E2 Transponder 17-Horizontal (C-band)</b>		<b>RCA C5 Transponder 3-Vertical (C-band)</b>	
1395.80 (64.2)	WTMJ-AM (620) Milwaukee, WI—talk radio/Brewers MLB radio network	1126.00 (54.0)	Canadian Broadcasting Corporation (CBC) Radio-North (Western Arctic) service	1404.60 (55.4)	Wyoming News Network—network news feeds
1395.60 (64.4)	WGST-AM/FM (640/105.7) Atlanta, GA ID <i>Planet Radio</i> —news and talk radio	1125.50 (54.5)	Canadian Broadcasting Corporation (CBC) Radio-North (Newfoundland and Labrador) service	1400.60 (59.4)	Learfield Communications
1395.40 (64.6)	Michigan News Network—network news feeds	<b>Anik E2 Transponder 23-Horizontal (C-band)</b>		1400.40 (59.6)	Learfield Communications/MissouriNet
1395.00 (65.0)	Occasional audio	1006.00 (54.0)	Societe Radio-Canada (SRC) Radio-AM Network	1400.20 (59.8)	Occasional audio
1394.70 (65.3)	WJR-AM (760) Detroit, MI—news and talk radio/Michigan News Network/Tigers MLB radio network			1400.00 (60.0)	Learfield Communications
1394.30 (65.7)	Michigan News Network - network news feeds			1396.60 (63.4)	Kansas Information Network/Kansas Agnet—network news feeds
1385.40 (74.6)	WDUQ-FM (90.5) Pittsburgh, PA - Jazz format			1396.40 (63.6)	Liberty Works Radio Network - talk radio
1384.60 (75.4)	WDUQ-FM (90.5) Pittsburgh, PA - Jazz format			1396.20 (63.8)	MissouriNet/St Louis Cardinals MLB radio network
1384.40 (75.6)	KOA-AM (850)/KTLK-AM (760) Denver, CO—news and talk radio sports/Rockies MLB radio network			1396.10 (63.9)	MissouriNet
1384.20 (75.8)	WSB-AM (750) Atlanta, GA - news/talk/Braves MLB radio network			1395.90 (64.1)	Western Montana Radio Network/Red River Farm Network
1383.10 (76.9)	KIRO-AM (710) Seattle, WA—news and talk radio/Mariners MLB radio network			1395.70 (64.3)	MissouriNet/Kansas City Royals MLB radio network

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# Uniden's SQ-590: Last Chance for a Talented Receiver

In the May issue of this column I answered a question from *MT* reader Henry Yamauchi regarding the availability Uniden's SQ-590 satellite receiver. I knew they were no longer in production and assumed that was the end of them. Not so, said Skyvision's Mel Frank, who advised me that Skyvision had purchased the last of this particular receiver and were selling them via their catalog and website.

Why all this interest in a satellite receiver which is no longer even made? Well, it's a unique receiver in that, in addition to all the other features, it has a built-in Single Channel Per Carrier (SCPC) receiver which gives you access to most of the channels listed in the *MT* "SCPC Services" section of the "Satellite Radio Guide."

The fact that Skyvision has snapped them all up and is making them available is good news for *MT* readers. Here's one last chance to get an extremely versatile satellite receiver from a reputable manufacturer, still under warranty and at a very low price. Let's see what the SQ-590 has to offer.

### ■ Victim of Circumstances

The year was 1993 and the home satellite industry was enjoying a period of prosperity just prior to the dawn of the DBS revolution. Manufacturers were many and in stiff competition to provide the latest features and explore new territory. Uniden was producing a wide range of satellite TV receivers ranging from the most basic to the most sophisticated. The model SQ-590 was clearly designed for the avid TVRO hobbyist who wanted it all in one neat package.

Unfortunately, by 1994 the DBS craze was in full swing and the big dish satellite industry was on another steep decline. Some manufacturers and many local dealers went out of business. Other manufacturers in better financial condition, such as Uniden, cut back on production and sought to ride out this new downturn.

As a result, prices on tons of brand new, in-the-carton receivers such as the SQ-590 were slashed and the last five years have been the best for getting into the big dish satellite TV hobby. Once the original production run of these receivers is exhausted, you won't see them again.

### ■ Packed with Features

Aside from the standard capabilities such as built-in dish drive and stereo subcarrier tuner, the SQ-590 is VCII capable (VideoCipherII module extra), and has a StarSight module built-in as well. StarSight is the on-screen service which most DBS receivers use. For a small monthly fee, subscribers have an on-screen TV guide which not only tells them what's on when, but lets them record programs, including pay-per-view events, even if they're not home. The StarSight data is downloaded each day to your receiver while you sleep, so information is more current than any printed guide and costs about the same!

But, that's not nearly all. In addition to the full-featured UHF remote control, there's a much smaller infrared remote control which performs all the major functions of the main remote including power on/off, audio mute, volume up/down, channel up/down, dish drive east or west, and access to StarSight. This unit can be kept bedside, while the main remote is elsewhere, and includes an infrared remote extender.

Aside from the standard features controlled by the main remote, the SQ-590 does other tricks. One button freezes the on-screen video for three seconds and stores it in video memory. Later it can be recalled for 30 seconds by pressing the RVW (Review) button. A scan feature displays from four to nine individual channels in windows on the screen and allows you to see what's on the whole satellite at a glance.

A Picture-In-Picture (PIP) button lets you display the video from any other video

source which is plugged into the "aux" plug of the SQ-590. By pressing the PIP button again, you can swap pictures. The video in the "aux" plug will be the main image and the video from the SQ-590 will be the small picture. This feature is particularly useful with a DVB receiver, but you can use it to feed over-the-air channels via your VCR as well.

### ■ The Main Event

What made the SQ-590 unique was the addition of the SCPC tuning module onboard. It was a feature designed to satisfy the serious satellite TV enthusiast by making it possible to tune the dozens of extra SCPC audio services which no other TVRO receiver could do.

SCPC is the method of transmitting many of the radio networks heard on America's radio stations all over the country. These transmissions are very narrowband analog audio services and are a cost-effective way to disseminate programming and build a national network. Radio stations, rebroadcasting the programs, downlink the programming via expensive commercial grade SCPC receivers for transmission at the local station. Much of the programming is related to talk radio and sports events. A thorough look at the SCPC services section of the Satellite Radio Guide on pages 63 and 64 of this magazine will give you an idea of the scope of such broadcasts.

Audio fidelity is not the concern of most SCPC services which are destined for the AM radio market to begin with, so don't expect the same quality audio on SCPC that you'll hear when tuning the much wider FM subcarriers. Still, being able to listen to professional college and pro sports events via SCPC is a lot of fun. And, tuning in on some of America's most venerable AM broadcast giants such as WGN, KSL, KOA, WSB, WHO and others is a real treat. Many of these broadcasters maintain a full-time presence on SCPC even when there's not a

sporting event in progress.

Is the SCPC module in the SQ-590 as good as the Universal SCPC-200 standalone SCPC receiver? In a word, no. The Universal SCPC-200 is a top grade consumer SCPC receiver with built-in companding, 50 channel memory, and narrow/wide bandwidth capability. In a side-by-side comparison, the SCPC-200 was the obvious winner. Just think of the SCPC module in the SQ-590 as one more terrific feature in a satellite TV receiver already packed with great features.

## ■ The Bottom Line

The only thing that really dates this receiver is the automatic "program satellites" feature which lists satellites which don't exist anymore or those which have since moved to other locations. This is no problem since you can still program the unit manually and it won't take much longer.

If the power is out longer than 10 minutes you'll have to reset the clock, though all the other data stored remains. Again, no problem: setting the clock is the easiest function on the receiver! If you're not using a VCII module, tuning the audio subcarriers on scrambled channels is a bit challenging, but once set they remain in the receiver's memory.

In 1993 the Uniden SQ-590 was considered one of the best satellite TV receivers on the market; its features were way ahead of the rest. Even if you choose not to equip this receiver with a VCII decoder module, it still makes a great receiver for all the unencrypted video programming and extensive FM audio subcarriers. With the SCPC module and the long list of extras, including a manufacturer's warranty and access to the StarSight guide, the SQ-590 is still a great buy.

The SQ-590 lists in the Skyvision catalog at \$599.95 or \$629.95 with the StarSight module. Add \$24 shipping and handling. For ordering information or to find out more about the SQ-590 call Skyvision at 800-500-9275 or visit their website at [www.skyvision.com](http://www.skyvision.com). Skyvision periodically has sales on these receivers, so watch their flyers and web site for even more discounts. For more information about the StarSight guide visit [www.starsight.com](http://www.starsight.com). StarSight subscriptions are \$2.50 a month.

## The Uniden SQ-590 with built-in StarSight on-screen guide and SCPC audio receiver has more options than any analog satellite receiver in its class.



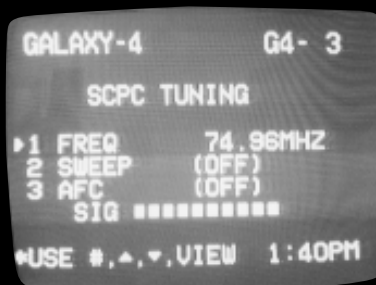
*Video Scan feature scans the satellite, captures an image from an active channel and pastes it in a corner of the screen. The screen can be set to show four (as in photo) or nine individual channels. There's also a "freeze" feature which allows you to freeze the image of a channel at any time.*

*Picture-in-Picture (PIP) allows you to watch one channel while displaying another channel from any other video source. Here we're watching the ubiquitous Dr. Scott on the Uniden SQ-590 while keeping up with the latest ball scores on CBC's Newsworld International through a DVB satellite receiver. (Don't tell the Doctor we do this.) By pressing the PIP button again we can flip-flop the channels and watch Newsworld while keeping up with the latest activities of the good Dr.'s Swedish "equestrian team."*



*StarSight is the on-screen C-band satellite TV guide which is updated every 24 hours and loaded onto your SQ-590 while you sleep. It interfaces with your VCR and allows you to record up to 25 events.*

*SCPC tuning is a unique feature to the SQ-590. The built-in SCPC module is accessed by pressing the "audio" tuning button on the remote control and then pressing "0". This brings up the SCPC tuning screen*



*To tune SCPC frequencies manually simply press the arrow up or down button on the remote control. Scrolling the cursor to "sweep" starts the automatic tuning mode. Note signal strength bar at bottom. Here we're listening to jazz on WDUQ from Pittsburgh. The frequency is slightly off that listed in MT's guide due to slight variations in each system's LNB.*

*A video tuning feature allows the user to make adjustments to improve picture quality which is useful when experiencing Terrestrial Interference (TI) on C-band or narrow band video on Ku-band.*



(All photos courtesy Ken Reitz)

## Listening 101

I've spent more than half my life going to schools, colleges, universities and the odd seminary here and there. Even though it has been some years since I've been in the matriculated state, I still get the urge to start a new course of study in September. This year is no exception, so, instead of taking on the role of student, I will put on my academic robes and perform the role of instructor. Think of this as an "Introductory Course in Radio Monitoring."

This could be a very easy column to write. I could just write "listen, listen, listen, ..." for a full eighteen hundred words and I would be pretty much on target. What we will cover in this class is a bit of information on how to "listen smart." After all, knowledge is power!

### ■ Grok your hardware

I remain a prime proponent of the maxim "When in doubt, read the manual." Poring over the documentation that came in the box with your receiver gives you maximum access to all of your rig's abilities. Since modern receivers seem to have more buttons than an old maid's shoes, review of the receiver manual from time to time will refresh your memory on how to keep everything up and running. Most manuals will also make suggestions concerning antennas and accessories that will further improve your listening.

Speaking of accessories, they often come with documentation, too. Bone up on these papers as well; you may discover certain quirks in accessory operation that must be dealt with to get things humming along in your listening post.

If you have been reading *MT* for any length of time, you have probably come across a few hardware tips that may apply to your monitoring methods and madness. Folks like Bill Cheek and Ike Kerschner, Clem Small and Bob Parnass have all enlightened us from time to time.

I usually read such technical articles with a "highlighter" pen in hand. When I come across something worth trying out, I simply mark it off for future reference. Some folks prefer to make a clipping file or a notebook. Whatever method you choose, if you don't take time to keep track of helpful hints, they won't be very helpful.

### ■ What's the frequency, Kenneth?

This is so much more than simply being able to reel off a list of frequencies. Sure, knowing where to listen for certain signals will get you an entry or two in your log book, but knowing how to listen for stuff that is unexpected will also give you unexpected rewards.

For starters, get to know the *Propagation Conditions* that are found in Jacques d'Avignon's columns in *MT*. Knowing which portions of the HF bands are running "hot" at any given time will always point you to new listening opportunities.

You will also want to get into the habit of tuning into WWV or WWVH (2.5 MHz, 5 MHz, 10 MHz, 15 MHz and 20 MHz) at 18 minutes past the top of the hour to get up to the minute propagation forecasts. If reception isn't favorable you can also check out their website at <http://www.boulder.nist.gov>

Scanner folks will also want to track weather patterns that can influence long distance listening opportunities on the VHF and UHF portions of the bands. Weather conditions that lead to a layer of cold air sandwiched between two layers of warm air can create extra long distance scanner DX known as *tropospheric ducting*.

Also, a glance through an almanac that lists astronomical information will point you to periods of the larger meteor showers. Some very interesting long distance VHF/UHF conditions can occur at these times known as *meteor scatter*.

Once you zero in on the bands that are going to bear the most fruit, tune around and get a notion of what is out there. Of course you will log all the broadcast stations you hear, but you will also want to keep track of all the other signals that frequent the band. Getting to know a few megahertz of the bands at a time is the key to long-term listening skills. This applies equally to mediumwave, scanner listening and all other forms of radio monitoring. Again, your logs and notes will serve to refresh your memory and turn you into a real DXpert.

As I said at the beginning of this tirade, there is no substitute for listening. A beginner with modest equipment who keeps his or her ear to the speaker is going to go a lot further than the "expert" with a multi-thousand dollar listening post who only twists the



dials for an hour or two on weekends. Tenacity rules!

### ■ Does anybody really know what time it is?

Since you are starting up a few notebooks, you might want to set aside a few pages to help you keep track of all this time stuff. As we know from both philosophy and science, time is an abstract concept. For various reasons far beyond the scope of this column, time is recorded in many different ways. Whether you are listening around the world or down the street, you will encounter various time zones, Local Time, Coordinated Universal Time, Military Time—maybe even Gregorian and Julian calendars.

Magazines such as *MT* regularly provide charts and hints to help monitors make sense out of time systems, but let me give you a short seminar on common time problems:

First get used to converting your local time into the 24-hour format. Midnight is zero hour (just like in all those old war movies). 1:00 a.m. (ante meridian) through 12:00 noon (meridian) remain the same as always. When you get to 1:00 p.m. (post meridian) you add twelve to each appointed hour. 1:00 p.m. becomes 13:00, 2:00 p.m. becomes 14:00 and so on until you reach



midnight and zero hour again.

Getting this notion down will allow you to follow local police, fire and emergency services that use the 24-hour format. It also prepares you for the quick and dirty system of learning Coordinated Universal Time (also known as UTC), the system used by most international broadcasters.

To find UTC, first convert your local time to 24-hour format. If you live in the Eastern Time zone add 5 hours to get the current UTC for your area. If your area is in Daylight Saving Time subtract 1 hour from your answer (or just add 4 hours in the first place). Central Time folks will add 6 hours, Mountain Timers add 7 hours and Pacific Time folks will add 8 hours. Again, don't forget to subtract 1 hour from your answer if you are currently in Daylight Saving Time.

The other easy answer to keeping track of UTC time is to simply keep your subscription to *MT* current and follow the tops of the pages of the Shortwave Guide section of this magazine. We can't make it any easier than that, folks!

### ■ We want....information, information, information!

Even in this modern technological age, sometimes the "old ways" are the best ways. They are also the easiest and least expensive for beginners in the radio hobby. My shack is populated at any given time with no less than three computers; however, it also includes a good old-fashioned log book and card file. A traditional log book serves as a history of what I have heard over time. My file box serves as my frequency and station hit list.

Sure, I have all this data entered into a computer system and I do use that system for ongoing trends and analysis. Still the traditional tools of the trade, log book and file box, are often faster for basic record keeping while actually listening. Besides, have you ever heard the noises that computers can generate right in the middle of the bands we all enjoy monitoring?

While you can purchase commercially produced log books, you might find it fun to develop your own logging system. A plain old notebook will do. Just remember to keep track of all the basic data. 1) Date, 2) Time (UTC and Local), 3) Frequency, 4) Station, 5) Program data, 6) Signal quality data, 7) Verification (QSL) information.

Some people find it useful to keep track of other information such as local weather conditions or the propagation indexes that are given over WWV and WWVH. It's your log book. You can write what you want to!

The good old file box can serve as a master frequency catalog, not only of things you

have heard but also things you are trying to hear. Let's say you've been trying to catch the Lower Slobovian relay of Radio Freedonia. You might make up a file card with all the days, times and frequencies this station may appear. If you're really hot on the trail, you can make multiple cards that are cross-referenced by time and frequency. When you sit down to DX, you'll know exactly where to go hunting for that rare catch.

Those of you getting involved in amateur radio will want to start a card box of previous contacts and their areas of interest. This can help with "ragchewing" as you extend your circle of radio friends.

### ■ The Unexamined Life is Not Worth Living

Okay, so I probably took too many philosophy courses, but this is more than just sage advice. This is the key to success in the radio hobby.

Try to judge honestly how much of your whole life you plan to devote to your radio hobby. Radio monitoring can be the spice of life, but I have found that, for most people, it makes a pretty poor meal three times a day. The basic guidelines are easy: If your listen-

ing habits are disturbing your work, your schooling, or your relationships with your friends and family, you are no longer a hobbyist, you are an addict.

As those commercials on TV say, addictions are life destroying, not life enhancing. Try to keep your perspective clear on this point, because we all hope that your interest in monitoring will be lifelong. Heck, our advertisers are betting on it!

While you are working to keep your monitoring practices in perspective, you might as well be realistic regarding your monitoring goals and achievements as well. Even with super equipment, lots of practice, and an advanced degree in the science of propagation, a good chunk of what happens is still pure luck. Don't be overly impressed with the successes of others. They were in the right place at the right time to hear some things. You will be in the right place at the right time for others. In terms of total stations heard, the only thing most so-called experts have over you as a beginner is more time at the dials. You'll get there too, my friend! It just takes time.

Relax, this is supposed to be fun, remember? Never forget that the only person you have to impress is yourself. Class dismissed!

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## Weather Satellites are Here to Stay

**W**ith the new Okean-O oceanographic satellite rescheduled for launch just two days after I write this, we can anticipate hearing it fairly soon. It has been confirmed that it will transmit APT (automatic picture telemetry) on 137.40 MHz, but unfortunately, these are not continuous transmissions and they are likely to be mostly over western Europe.

Resurs 01-N4 is transmitting almost continuously; during much of its late evening northbound passes over Britain, it has switched on long before reaching the sunlit north polar region.

Ever since the first imaging satellite transmitted a picture of earth's clouds to ground control, the importance of operating and maintaining a constellation of "weather satellites" has been recognized. I have been looking at the published lists of planned launches for the new generation of satellites that will carry the latest sensors, and will include them in future editions.

### ■ GOES WEFAX

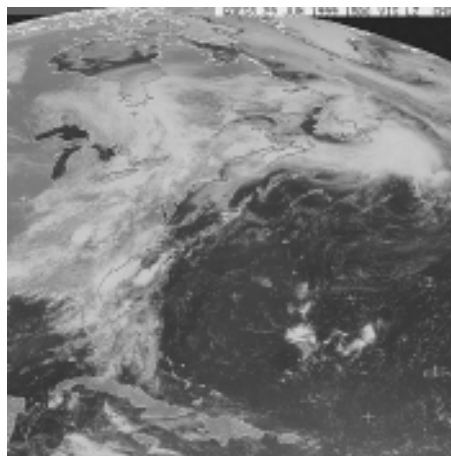
WEFAX (weather facsimile) was first introduced as a communications relay experiment on Applications Technology Satellites (ATS), then subsequently refined for the new generation Synchronous Meteorological Satellite (SMS) or Geostationary Operational Environmental Satellite (GOES). SMS/GOES satellites were developed for the National Oceanic and Atmospheric Administration (NOAA). SMS-1, the first prototype of the GOES series, was launched May 17, 1974, and the first NOAA funded satellite, GOES-1, was launched October 16, 1975.

WEFAX dissemination from the SMS/GOES satellites began in 1976, and remains on a down-link S-band frequency of 1691.0 MHz. In the early days of SMS/GOES, it was assumed that potential WEFAX users already had Very High Frequency (VHF) Automatic Picture Transmission (APT) receiving stations operating in the 135 to 137 MHz region. These were used for receiving ATS WEFAX and polar orbiting satellite APT.

Technical standards for the SMS/GOES WEFAX dissemination were developed by National Earth Satellite Service (NESS), and they allowed most of the existing APT ground receiving components to be used to receive

SMS/GOES WEFAX. Although the transmission frequency from the spacecraft would be 1691.0 MHz, the 2400 Hz sub-carrier signal characteristics, the type of modulation (AM/FM), and the image format were not changed. Consequently, users' existing recording equipment could continue to be used. In addition, with a relatively simple VHF to S-band conversion kit, existing receiver systems could also be used.

To answer the query "what does GOES actually transmit?" I plan to include regular examples of GOES-8 WEFAX images – see figure 1 for the first look.



**FIG 1: GOES-8 visible-light image 1500UTC from June 29.**

### ■ How much can you see?

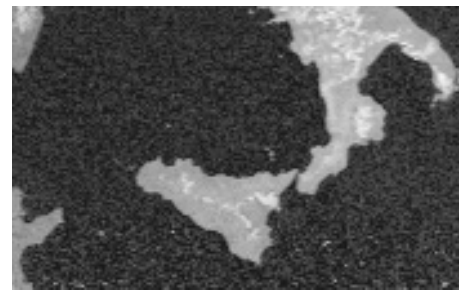
The Internet's WXSAT (weather satellite) mailing list is an active discussion forum for all aspects of reception. One recent topic was the visibility – or otherwise – of the volcano on Mount Etna on Sicily. As far as I can recall, eruptions of smoke and steam have been visible during the last several years. Whenever an announcement has been made on the news, the activity has been identifiable. Figure 2 shows the latest image received as I complete this column. This shows more detail than my atlas, so perhaps I need a new atlas! Several small image "imperfections" turned out to be islands shown on the map.

If you wish to join the Internet mailing list, send a "subscription" e-mail to:

[wxsat-request@met.fsu.edu](mailto:wxsat-request@met.fsu.edu)

As well as being an excellent source of

general information announcements from NOAA, the list provides the latest Keplerian elements for updating your satellite tracking program each week.



**FIG 2: Sicily - NOAA-14 1416 UTC July 11, 1999**

### ■ Further GOES-L launch delay

National Environmental Satellite Data and Information Service (NESDIS) management announced a new launch schedule for GOES-L. "The launch date for NOAA GOES-L has now been delayed to no earlier than the October/November 1999 time frame. A more definitive date will be established once corrective actions, if necessary, are defined."

It appears that a breach in the combustion chamber structure of the RL10 engine caused the May launch failure. They have concluded that one of the GOES RL10 engines is the worst of the lot waiting to fly. Lockheed Martin believes that the necessary actions to clear the engines for flight cannot be completed in time to permit launch by August 20, the start of the fall eclipse. Therefore, they made the decision to delay the launch of GOES and remove the launch vehicle from the pad. NOAA and NASA concurred with this decision. The spacecraft remains at Cape Canaveral. Lockheed Martin will work with the government to prepare a return to flight plan.

My thanks to Steve Arnett for this information.

The Office of Systems Development site address is:

<http://www.osd.noaa.gov/>

### ■ More free software and updates

Last month I mentioned a new satellite tracking program written by David Taylor.

David has recently issued updates to *WXTRACK* that improve its operation considerably. He has also produced a program called *SatSignal* that decodes the wav files produced by recording APT signals. Before describing the software, I should clarify the role of this program – and explain what else is needed!

There are two main routes into the world of WXSAT monitoring: one involves buying a complete system, often after seeing an article or advertisement for hardware for receiving and decoding images; the other is the do-it-yourself route. Over the years, I have trampled along both routes. I did some receiver and framestore construction back in the 1980s and found myself frequently needing to adjust things to keep the system operating. Then, following the dramatic fall in the price of computers, I bought a complete system that included an interface card. This price fall led to the exit of the framestore method of decoding APT signals.

For receiving a good quality WXSAT signal (*essential* for the satisfactory production of pictures) one needs a suitable receiver. Depending on your location around the world, your environment may or may not let you get away with using a slightly modified ordinary receiver.

General purpose VHF receivers can tune to the 137 MHz band and may have a bandwidth setting between 30 and 45 kHz that can cope with the extra-wide requirements of WXSAT telemetry. In Britain, local pagers transmit hefty amounts of RF right inside the 137 MHz band, so receivers need tightly designed circuitry to eliminate such interference. The audio output from such a receiver can be fed to a sound card and heard not only via the receiver's speaker, but also from the computer's speakers – when suitably configured!

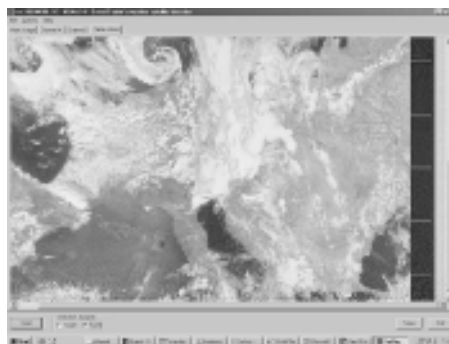
The signal can then be recorded using any suitable program. The built-in Windows' *sound recorder* can record the signal using manual operation, but this is not the best method of recording. A far better method is to use the *WXSAT* program for automatic recording: "recording – start at subcarrier – save wavfile" mode.

There are two main points to check: the volume level being recorded should not saturate the card's processor – set this using *sound recorder's* volume control. The sampling frequency and mono-stereo setting can be set appropriately. As an example, I usually record a mono data stream for a maximum of about 16 minutes (for a long Meteor pass), which takes up some 15 Mb disk space as wav files. When sound input levels are optimized, recording of an APT signal starts

when the sub-carrier is detected and finishes automatically.

After unattended operation over several hours, a number of substantial wav files should remain. These will be from the day's NOAA, Meteor and Resurs satellites. *WXSAT* itself can process these files, but this is where David's program comes into its own.

*WXSAT* can decode NOAA sound files and produce a bmp image file. Even after much experimentation, I have not been able to adjust its parameters to obtain a perfectly synchronized picture. The sub-carrier frequency is not a fixed 2.4 kHz, so my images always have a residual non-straight edge. David's program uses a sequence of software analysis procedures to identify the satellite, optimize image content, and then produce perfectly synchronized pictures. In the case of NOAA wav files, a set of four images are produced: main image (the dual channel display), channel A and channel B both optimized, and a false color (multi-spectral combination) image. Meteor and Resurs images are perfectly synchronized.



**FIG 3:** *SatSignal* – the display screen showing one of the four resulting NOAA images

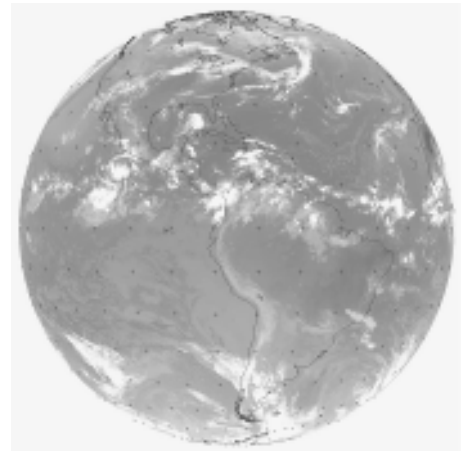
The main program *SatSignal* is currently a mere 150kb or so in zipped format for download; however, it does require a set of other programs and files from Intel and Borland. David provides direct links to these files, and much more, on his web site – definitely the WXSAT site of the month!

<http://www.davidtaylor.freemove.co.uk/software/index.html>

#### ■ Hot weather

The news of very hot weather in New York and other areas in early July prompted me to have a closer look at the high resolution images from GOES-E that are carried by Meteosat-7. The image that I collected – see figure 4 – shows a number of weather systems that prevented a view of the land, as

seen in this thermal image. Severe thunderstorms were developing rapidly in southeastern Minnesota and Wisconsin, and tornadoes were hitting Lewiston, Minnesota. A tornado of exceptional power hit Birmingham, UK, at the same time; tornadoes are rare in Britain.



**FIG 4:** *GOES-E* infrared image from July 9, 1999

#### FREQUENCIES

NOAA-14 transmits APT on 137.62 MHz  
 NOAA-12 and -15 transmit APT on 137.50 MHz  
 Meteor 3-5 transmits APT on 137.30 MHz when in sunlight  
 Resurs 1-4 transmits APT on 137.85 MHz  
 Okean-4 and Sich-1 sometimes transmit APT briefly on 137.40 MHz  
 GOES-8 and GOES-10 use 1691 MHz for WEFAX

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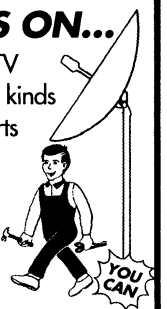


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## New HF Zulu Frequency Found

**T**hose of you who have followed my *Ute World* columns in years past know by now that it was *Monitoring Times* that first broke the story to the radio world on the existence of the U.S. Strategic Command HF Zulu voice coordination nets for their airborne command post (E-4 and E-6 aircraft).

My old *UW* buddy, Jeff Haverlah, called me this week to announce that he had found another Zulu designator/frequency. Thanks to the improved solar conditions, I expect some of the higher frequencies that have yet to be identified with a Zulu identifier will probably be catalogued in the near future.

### U.S. STRATEGIC COMMAND HF ZULU VOICE COORDINATION NETS

Frequency	Zulu designator
3068	Zulu 100
3116	Zulu 105
3134	Zulu 110
3143	Zulu 115
3295	Zulu 120
4495	Zulu 125
4472	Zulu 130
4745	Zulu 135
5026	Zulu 140
5705	Zulu 145
5800	Zulu 150
5875	Zulu 155
6715	Zulu 160
6757	Zulu 165
7831	Zulu 170
9016	Zulu 175
9057	Zulu 180
9809	Zulu 185
10204	Zulu 190
11104	Zulu 195 Tentative
11181	Zulu 200
11494	Zulu 205
11229	Zulu 210
12070	Zulu 211
13242	Zulu 215
13245	Zulu 220
13907	Zulu 225
15046	Zulu 230
15094	Zulu 235
15097	Zulu 240
15962	Zulu 250
17973	Zulu 255
18006	Zulu 260
18027	Zulu 270
18046	Zulu 275 Tentative
19665	Zulu 290
23872	Zulu 315

If you have an update to the list above, feel free to email me at the address in the masthead and a special thanks to my good friend Jeff Haverlah for finding another one.



*The E-4B serves as the National Airborne Operations Center for the National Command Authorities. The E-4B is the heart of the Stratcom HF Zulu nets. (USAF photograph)*

### ■ Mystic Star Update

Also back in my old *UW* days, we would run the occasional Mystic Star (MS) list. In overly simple terms, Mystic Star is a US Air Force VIP (very important person) communications network. *Milcom* regular reporter Paul Bunyan passes along these MS system updates to the list we published in the September 1997 issue of *MT*. Thanks a million, Paul, for all the following.

Freq	Desig	Notes
14412	F-070	Tentative
6993	F-085	Second possible designator for this frequency, in addition to confirmed F-117 – very tentative.
12087	F-126	Unconfirmed, two separate sources now indicate this designation for this frequency
23242	F-128	Rather than 22242.
20650	F-174	Confirmed
7500.5	F-301	rather than 7505.5
8083	F-543	Unconfirmed



*A fleet of 16 Navy E-6B TACAMO ("Take Charge and Move Out") aircraft like the one pictured have replaced the Air Force's EC-135 Looking Glass. The TACAMO aircraft are major participants on the Nightwatch Zulu nets. (Photo by Master Sgt. Keith Reed, Offutt AFB)*

11053	F-655	Second possible designator for this frequency, in addition to confirmed F-354 – very tentative
12109	F-853	Confirmed
13248	F-873	Confirmed
13207	F-885	Confirmed
7922.5	F-935	Confirmed

Recently, while monitoring a HF phone patch between Reach 5004 and Offutt Base Ops on 9057 kHz, Paul caught the following VHF/HF/UHF military frequency updates being passed for the base:

Approach/Departure Control	277.500
VHF ATIS	141.050 to 138.100
VHF Tower	126.200 to 120.900
UHF ATIS	302.200 to 300.100
UHF Clearance Delivery	361.400
UHF Ground Control	275.800 to 261.250
UHF Tower	241.000 to 241.200

### ■ Randolph AFB

Paul also contributed the following presets for the 12<sup>th</sup> Fighter Training Wing (FTW)/559 Fighter Training Squadron T-37B aircraft based out of Randolph AFB (northeast of San Antonio, Texas). (Editor note: I have added the usage column to Paul's list for clarity with information from my personal notes)

Ch	Frequency	Usage
01	316.800	Randolph (Hangover) Ground Control (Used during student training)
02	291.100	Randolph (Hangover) Tower (Used during student training)
03	258.300	Randolph Tower
04	392.100	San Antonio Approach/Departure Control (International Airport: 360-090 deg)
05	318.100	San Antonio Approach/Departure Control (Randolph AFB/International Airport: 091-140 deg)
06	252.900	San Antonio Approach/Departure Control (International Airport)
07	251.125	San Antonio Approach/Departure Control (Randolph AFB/International Airport)
08	379.900	Stinson Field (KSSF) Tower/Ground Control
09	311.300	12th FTW T-37 Supervisor of Flying (Randolph AFB)
10	269.100	San Antonio Approach/Departure Control (International Airport)
11	307.000	San Antonio Approach Control (Kelly AFB/Approach and Departure Control International Airport: 271-359 degrees)
12	381.400	San Antonio Departure Control (Kelly AFB)/Approach and Departure Control (Stinson Field)
13	253.500	Ellington Field (KEFD) Tower?
14	291.700	Houston ARTCC (Beecaves) Sector 50
15	301.400	Houston ARTCC (SATA) Sector T38



**Flight of four T-37B aircraft from the 12<sup>th</sup> FTW Randolph AFB, Texas, on a training mission. (USAF photograph)**

16	320.100	Kelly AFB Tower
17	275.800	Randolph Ground Control
18	257.800	San Antonio International Airport Tower
19	Blank	
20	255.400	FAA San Angelo Flight Service Station (Nationwide allocation)

#### Other San Antonio area frequencies:

239.800	Randolph Metro (Weather information)
271.200	RSU Communications (Seguin, TX)
271.800	Randolph ATIS (Automatic Terminal Information Service)
289.200	San Antonio Approach Control (Kelly AFB)
298.000	Randolph GCA
317.500	San Antonio Approach/Departure Control (International Airport)
325.800	Randolph Clearance Delivery
348.400	Unknown (Just a note here that San Antonio International Ground Control is on 348.600)
353.500	San Antonio Approach Control (Kelly AFB/Approach and Departure International Airport: 141-270 degrees)
372.200	Randolph Pilot to Dispatcher (Nationwide allocation)
397.000	San Antonio Departure Control

#### ■ 442<sup>nd</sup> Fighter Wing Presets

Here is another set of US Air Force radio presets used in the aircraft flown by the Air Force Reserve's 442<sup>nd</sup> Fighter Wing based at Whiteman AFB, Missouri. This list is courtesy of Mark Meece's *Federal Government and Military* column in the All Ohio Scanner club bulletin (July/August 1999).

Agency	Channel	UHF	VHF	FM	
Ground Hog	1	227.8	138.125	36.50	
Clearance	2	335.8	121.750	36.60	Riley RC
Ground	3	275.8	128.275	49.95	Campbell RC
Tower	4	255.8	132.400	38.50	Chalee RC
Departure	5	398.2	125.925	40.95	Polk RC
KC Center	6	285.6	119.650	49.85	Polk RC
MOA cti*	7	260.25	124.475	32.35	Inter-flight

Arrival	8	286.35	120.250	46.85	Inter-flight
Approach	9	284.0	127.450	49.95	Inter-flight
Flight Service	10	255.4	122.400	34.60	Inter-flight
Cannon	11	392.2	139.450	139.450	
Fomey	12	241.0	125.400	125.400	
Smokey	13	316.9	139.700	139.700	
SFA*	14	358.25	138.400	138.400	Inter-flight
ATIS	15	239.025	118.725	118.725	
MOA discrete*	16	305.1	149.525	149.525	Inter-flight
KC-Cannon	17	317.9	149.100	149.100	Inter-flight
KC-Forbes	18	327.0	148.450	148.450	Inter-flight
Forbes Tower	19	255.9	138.300	138.200	Inter-flight
HQ*	20	220.0	149.250	149.250	Inter-flight

\*HQ-Have Quick, SFA-Single Frequency Approach, MOA-Military Operating Area, KC-Kansas City, cti-control

#### ■ Wright Patterson TRS Monitored

Now that the Uniden BC-245 is on the street, military and federal monitors can finally track federal and military trunk radio systems (TRS) in the VHF (138-150 MHz) and UHF (406-420 MHz) bands. A lot of new listening opportunities and information will come to light now that these systems can be monitored using trunk scanning technology.

Mark Meece recently posted this update to the Milcom email list, courtesy of Mike Schulsinger of the All Ohio club. It was monitored using the new Uniden BC-245XLT handheld scanner.

### WRIGHT-PATTERSON AFB TRUNK RADIO SYSTEM

Type: Motorola Type II

#### Frequencies:

Group 1 Channel 2 407.150	Group 3 Channel 1 406.550
Group 1 Channel 3 407.950	Group 3 Channel 2 407.350
Group 1 Channel 4 408.750	Group 3 Channel 4 408.950
Group 1 Channel 5 409.550	Group 3 Channel 5 409.750
Group 2 Channel 5 409.950	Group 1 Channel 1 406.350
Interconnect Group 3 Channel 1 406.550	

Note: The data channel is rotated among the Group 1 channels in the following sequence: 5, 4, 3, 2, 5, 4, 3, 2 and so on. The changes takes place around 1 a.m. local time. The phone patch on Group 1 Channel 1 406.350 is part of the trunk system. Group identifications appear when the patch is used.

Talkgroups	Usage
16	Patterson Ground
112	Civil Engineering – Housing
176	Unknown
208	Hazardous Material?
272	Fire Ground
368	Fire – crosspatch to 154.280 MHz
496	Base Operations
528	U.S. Air Force Museum
592	Fire/Medic 1
656	Fire Ground
688	Fire Ground
752	Civil Engineering
816	Civil Engineering – Grounds
944	Transportation
976	Fuel Control
1008	88 Air Base Wing Flight Line
1040	Security Chat
1072	Flight Line
1136	Flight Line
1200	Unknown
1232	Supply
1584	Unknown (heard Charlie 3, Cobra 1 on weekend)
2352	Medical Net?
2480	Bio Net
2640	Unknown
2704	Unknown
3216	445 Airlift Wing Aircraft Maintenance
3248	Nightwatch Net (E-4B system)
3280	445 Air Wing Aeromed?
8016	Security 1
8048	Security 2
9904	Commo
10064	Unknown
10224	Civil Engineering
10320	Unknown – testing radios
10352	Unknown maintenance
10640	Civil Engineering
10672	445 Air Wing
10736	Unknown – testing radios
10800	Civil Engineering
10928	Civil Engineering
10960	Fire
11024	Security Chat
11056	Security Chat
11088	Security Chat
11216	Transportation
11248	445 Air Wing
11280	445 Air Wing Aircraft Maintenance

Thanks to Mike, Mark, the All Ohio Scanner Club, and Milcom, for these two interesting profiles. If you have a new BC-245 and are listening to a military/government trunking system, be sure to drop us a note and let us know what you are hearing.

In the next edition of *Milcom* we will do an update on our previous list of UHF military aircraft band frequency holes and pass along a new list of unIDs for you to look at. See you in two months and good hunting.



# Stockholm to San Francisco Bay

**W**elcome aboard and fasten your seatbelts, as our first stop today is Stockholmradio! Thanks to Mr. Oakie Schroder, Manager, Aero Services, for permission to utilize this information.

Stockholm Radio is one of the very few Air Operational Control (AOC) or Long Distance Operational Control (LDOC, pronounced as "el-doc") companies in Europe, serving the aviation community worldwide with flight operational phone patches, message delivery, meteorological info, etc. The LDOC operates on shortwave (HF) only. They are located in Nacka Strand, just east of the Swedish capital.

While it is impossible to define the exact boundaries of HF coverage, Stockholmradio's experience has shown that they cover an area "from Northeast Canada across the Atlantic, the European Continent, Mediterranean, Africa, the Middle East and ranging eastward past India, with a high degree of reliability."

Stockholmradio is a part of Telia Mobile AB, a subsidiary to Telia AB – the Swedish Telecommunications Corporation. Its 35 skilled radio operators can be heard on the following frequencies (kHz):

3494	Night time only
5541	24 hours
8930	24 hours
11345	24 hours
13342	24 hours
13342	24 hours
17916	24 hours
23210	Daytime only

Transmitters include four 10 kW Collins channel transmitters with omnidirectional antennas; six 3 kW Collins fully synthesized solid state transmitters. Antennas are five fixed directional antennas plus one rotatable log-periodic for transmitting, and nine directional antennas used for receiving. Station receivers include six channel receivers and five all-frequency receivers.

Stockholmradio offers in-house-developed computer support using digital PDP11-84 to cater to all operational requirements: quick and reliable connections to SITA [Société Internationale de Télécommunications Aéronautiques], ARINC (Aviation Radio, Inc), and AFTN (Aeronautical Fixed Telecommunications Network), and quick access to meteorological data bases.

On a personal note, I monitor them regularly and find them to be a very interesting LDOC facility, and they seem to be well thought of by the aviation community. Their

operators always sound knowledgeable and very courteous! See their website at [www.storadio.com](http://www.storadio.com)

### ■ Oakland Tower Frequencies

As a treat for those who live in or are visiting the San Francisco Bay area, our next stop is Oakland, California, and the Bay TRACON (Terminal Radar Approach Control), whose callsign is Bay Approach or Bay Departure. These frequencies and accompanying information were contributed by Jean Lavaud, a controller at this facility and *MT* subscriber.

### SF BAY TOWER AND ATIS\* FREQUENCIES

San Francisco:	120.5/269.1; ATIS - 113.7/115.8/118.85
Oakland:	Rwy 29 - 127.2/256.9; ATIS - 133.775
	Rwy 27 - 118.3/395.9; ATIS - 133.775
Hayward:	120.2/257.8; ATIS-126.7
San Carlos:	119.0/326.2; ATIS-125.9
Palo Alto:	118.6; ATIS-120.6
Reid-Hillview:	119.8; ATIS-125.2
San Jose:	Rwy 30 - 124.0; ATIS-126.95
	Rwy 29 - 120.7; ATIS - 126.95
Moffett:	119.55/353.2; ATIS-283.0.

\*Automated Terminal Information System

### ■ Transponder code assignments

The following are transponder codes assigned to control towers. There are only a few codes assigned to each tower because the codes are only used to identify aircraft that call them directly (such as general aviation pilots.) Example: "Cessna 12345 squawk 1202 and ident." The computer will assign the next available code to each controller and also keep track of the daily count.

Oakland:	1201-1205
Hayward:	5300-5305
San Jose:	4600-4605
Palo Alto:	5200-5205*
San Carlos:	5200 -5205
Moffett:	5100-5107
Reid-Hillview:	5300-5305

\*Note 1: Palo Alto and San Carlos both receive the same radar video from Bay TRACON.

Codes used by the TRACON internally include:

0101-0139	(Oakland Class C airspace)
0140-0160	(San Jose Class C airspace)
4701-4733	(San Francisco Class B airspace)

4734-4760 (General use VFR aircraft)  
041-0433 (Local IFR)

### TRACONs:

Sector AR1: Mulford- 124.4/351.8  
Works arrivals to Oakland Rwy 29 and Hayward arrivals/departure Rwy 28.  
Sector AR2: Grove- 135.4/354.1  
Works arrivals to Oakland Rwy 27.  
Sector AR3: Woodside- 135.65/350.8  
Works the final to San Francisco for Rwy 28L and San Carlos departures.  
Sector AR4: Foster- 120.35/350.8  
Works the final to San Francisco for Rwy 28R.  
Sector AR5: S. Feeder- 133.95/317.6  
Works arrivals to SFO from Pt. Reyes, Oceanic, and Big Sur.  
Sector AR6: N. Feeder- 134.5/338.2  
Works arrivals to SFO (San Francisco), OAK (Oakland), HWD (Hayward), and NGZ (Alameda NAS) from Altamont, Podesto and Panoche.  
Sector AR7: Lick- 120.1/346.0  
Works arrivals to San Jose, Reid Hillview from the East and S. East.  
Sector AR8: Hooks- 135.2/379.1  
Works arrivals to Moffett, Palo Alto from Watsonville, Santa Cruz, & Woodside.  
Sector AR12: Diablo- 127.0/398.9  
Sequences VFR aircraft landing Oakland from the North thru East.  
Sector DR1: Sutro- 135.1/307.2  
Works departures from Oakland and San Francisco to NW, West and South.  
Sector DR2: Richmond- 120.9/323.2  
Works departures from Oakland and San Francisco North thru East.  
Sector DR3: Saratoga- 121.3/322.0  
Works departures from San Jose, Palo Alto, Reid Hillview and Moffett. Also works arrival to Palo Alto from the E.

### ■ Additional Information

Note 1: All VHF frequencies are paired with a UHF frequency, except Woodside and Foster: they share the **same** UHF frequency.  
Note 2: Most controllers put both frequencies in their headset. Some just monitor UHF on speaker and activate the transmitter when required.  
Note 3: During light traffic, Foster is combined with Woodside. For standby (28L & 28R) operation both positions are manned.  
Note 4: Hooks is always combined with Lick except SE plan.  
Note 5: Sutro is only combined with Richmond on the night shift (2300-0700). From 0700 to 2300, there is a coordinator helping both sectors.  
Note 6: Grove and Mulford are usually combined with the addition of a coordinator.

# The long-awaited UNIDEN BC245XLT is HERE!

This hand-held communications marvel has stunned the scanner marketplace with its dual trunking capabilities! Imagine scanning through conventional channels as well as both Motorola and GE-Ericsson EDACS channels simultaneously, stopping to hear any communications—your choice—on any of these systems!

With land, sea, and air frequency coverage of 29-54, 108-174, 406-512, and 806-956 MHz (less cellular), and 300 memory channels in 10 banks, this potent Bearcat even offers a nine-pin cable connector to permit downloading of computer databases. The information-packed LCD display is backlit for easy night viewing.

Factory pre-programmed search ranges target active police, fire/emergency, air, marine, railroad, and weather channels. Standard features include:

- Individual channel lockout
- Search
- Channel-selectable delay
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- 10 Priority channels
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- lightning-fast Turbo Scan!

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Order now at this low  
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## New and Improved

**"C**onventional wisdom" among AM DXers is that summer is the "off season," time to go fishing for fish rather than DX. This summer, that would be a mistake. I have news of a number of changes at both ends of the AM dial and in all parts of North America. So get out that receiver and spin the dial; there's DX to be had. (And, the fish will appreciate you leaving them alone.)

Starting with "New," we now have Mexico's first expanded-band station. Numerous DXers across the western half of the country began reporting mysterious dead carriers on 1630 kHz in late May; the station then began testing with music and announcements. XEUT in Tijuana is 10 kW day/1 kW night just like the U.S. expanded-band stations, and is operated by a university there. Final programming is not yet known. I believe Mexico is the fourth country to use the expanded band (the others being U.S., Australia, and Argentina).

Another new expanded-band operation had some DXers thinking it was in Mexico, and if it were any further south, it would be. KQXX-1700 has appeared in Brownsville, Texas. This is the expanded-band side of KBOR-1600 and carries a format of Mexican "ranchero" music.

Two English-language stations have also come on the air. KAZP-1620 Bellevue (Omaha), Nebraska, is an all-sports station relaying KOIL-1180. Many Midwestern DXers will remember KOIL as a top-40 station on 1290. The other new English-language expanded band operation is WMIB-1660 Marco Island, Florida, with a middle-of-the-road music format. Its regular-band station is WODX-1480, though the two do not simulcast. There are now 28 expanded-band stations in operation.

In the "Improved" department, we have two Canadian stations. As you may be aware, the two CBC 50,000 watt stations in Montreal, Quebec, have moved to FM. The 690 and 940 frequencies have both been silent for months, but several applications were received from other organizations to reactivate them.

On June 22, the Canadian government awarded both frequencies to Metromedia CMR. Metromedia will move their existing English-language talk station CIQC-600 to 940, and their French-language talk station CKVL-850 to 690. (You won't find CKVL listed as a Montreal station; it's licensed to the suburb of Verdun.) Both stations had suffered



**WODX-1480 is the regular-band sister station of new expanded-band outlet WMIB-1660.**

signal problems on their old frequencies, as the result of highly directional antennas.

The stations will be permitted to broadcast simultaneously on their old and new frequencies for six months. This leads me to believe the old CBC transmitter sites will be used, which would mean these stations could come on the air very quickly, quite likely by the time you read this. However, the antennas had been damaged by the 1998 ice storm, and I'm not certain they were fully repaired. Also, the FCC Engineering Database suggests both stations will use directional antennas (CBF-690 was nondirectional, and CBM-940 only very slightly directional) which would imply new antennas will have to be built. Montreal-area readers will have to keep us informed as to what is actually built here.

The CBC had applied to keep either 690 or 940 and use it for a national French-language all-news radio network. That application was

denied. In Canada, a license is also necessary to operate a radio network, and the network license was also denied. There continue to be rumors of CBC plans for other new radio networks, and frequencies do exist in most of the country, but I have yet to see anything official.

In Toronto, we have an event that may or may not be an improvement depending on your point of view. At midnight on June 20, CBL-740 finally left the AM dial for good, moving to 99.1 FM. CBL had served Canada's largest market from its Hornsby, Ontario, transmitter site since 1937. The Canadian government has not yet announced any applications for the 740 kHz facility, but I expect that to happen shortly. WMBL-740 Morehead City, North Carolina, seems to have taken over the frequency for most Northeastern U.S. DXers. Here in the South, KRMG Tulsa and KTRH Houston have always been the strongest signals on 740.

### ■ Bits and Pieces

Are you hearing anything interesting on 740 with CBL off the air? Write me at Box 98, Brasstown NC 28902-0098, or by email to w9wi@bellsouth.net. Good DX!

**TABLE 1: EXPANDED-BAND SCORECARD**

The following stations were operating in the 1610-1700 kHz band as of mid-summer:

Freq:	Callsign:	City:	Format:
1620	KAZP	Bellevue, Nebraska	sports
1620	WPHG	Atmore, Alabama	religion
1620	KSMH	Sacramento, California	religion (Catholic)
1620	KYIZ	Renton, Washington	urban
1620	WJVA	South Bend, Indiana	nostalgia
1630	XEUT	Tijuana, Mexico	testing
1630	KCJJ	Iowa City, Iowa	adult contemporary
1630	KKWY	Cheyenne, Wyoming	country
1640	KDIA	Vallejo, California	soul oldies
1640	KKJY	Lake Oswego, Oregon	religion
1640	WKSH	Sussex, Wisconsin	religion
1650	KGXL	Costa Mesa, California	nostalgia
1650	WHKT	Portsmouth, Virginia	religion
1650	KDNZ	Cedar Falls, Iowa	talk
1660	WMIB	Marco Island, Florida	nostalgia
1660	WQSN	Kalamazoo, Michigan	sports
1660	KXOL	Brigham City, Utah	oldies
1660	WWRU	Elizabeth, New Jersey	Spanish & Portuguese
1670	WRNC	Warner-Robins, Georgia	country
1670	WTDY	Madison, Wisconsin	news/talk
1680	WJNZ	Ada, Michigan	urban
1680	WTTM	Princeton, New Jersey	sports
1690	KDDZ	Arvada, Colorado	Radio Disney
1690	WMDM	Lexington Park, Maryland	talk
1700	KQXX	Brownsville, Texas	Mexican ranchero
1700	KBGG	Des Moines, Iowa	business talk
1700	KTBK	Dallas, Texas	sports
1700	WRNU	Miami Springs, Florida	Spanish talk

## Numbers Station CD Available

**"N**umbers" stations have been one of the most interesting puzzles on the shortwave bands for many decades. The mechanical counting by synthesized voices on these signals is both dull and intriguing at the same time. Many are operated by intelligence agencies around the world, either to hold a channel or to actually pass coded messages over the air.

MT reader Chris Smolinski, an expert on this phenomenon, has produced an interesting guide to these stations on CD Rom. Stations show up on your computer browser when you use the CD, complete with detailed information on their format and audio clips of the stations. A few digital modes are even included. The CD is available for US\$25 from Chris Smolinski, 4708 Trail Court, Westminster, MD 21158. It's a hobby service rather than a commercial product, so tell him that MT sent you!

### ■ Finn Web Page

One of the most interesting web sites that covers shortwave radio is hosted by MT contributor Bill Finn at <http://www.geocities.com/Athens/Academy/4187/#top> on the internet. Bill maintains links to a variety of shortwave broadcasters, but his most unique feature is a large collection of North American pirate station air checks, recorded by Bill himself. At <http://members.xoom.com/billfinn/audio/> you can hear Bram Stoker delivering jokes, Jimmy the Weasel "singing," and various other pirate fare.

Even if you don't own a shortwave radio, it is possible to get a taste of the flavor of pirate radio programming from Bill's quite useful collection. It isn't in a broadcasting museum yet, like the Committee to Preserve Radio Verifications, but it comes close!

### ■ Radiodifusora Paraton

Many DXers noticed a sudden late June move of broadcast station Radiodifusora Paraton in Peru to a frequency of 6955.47 kHz. Formerly noted around 6670 kHz, it now inhabits the prime shortwave pirate frequency during hours of darkness. If you're interested in hearing a mix of pop music with some *Huaynos* mixed in at times, this South American broadcaster has been putting a surprisingly consistent signal into North America.

But, the move is causing some nightly interference to pirate broadcasters, producing at least a heterodyne whistle for both AM and upper sideband pirates holding forth on 6955 kHz. Some stations have been moving up or down 5 or 10 kHz to avoid the problem, so it now pays to tune around somewhat while you're DXing for pirates.

### ■ Shortwave Pirate Activity

North American pirate radio stations heard by our readers last month all used frequencies within 500 kHz of 6955 kHz, typically from two or three hours before sunset until at least 0500 UTC. Morning and afternoon broadcasts increase on the weekends. Programming formats and contact maildrops (when known) are listed.

**Blind Faith Radio-** TV parodies and rock oldies dominate their fare.

(blindfaithradio@yahoo.com e-mail)

**CHU Canada-** They substitute rock music for the time signals. (None)

**Crazy Elmo's Radio World-** This one often relays other pirates like WREC used to do. (crazyelmo@youpy.com e-mail)

**Radio Azteca-** Bram Stoker's outstanding DX parody is genuinely funny. (Belfast)

**Radio Beaver-** Bucky Beaver is back asking listeners if they are really Canadian. (Merlin)

**Radio Garbanzo-** Fearless Fred, a naturally funny man, has a hilarious station. (Belfast)

**KIPM-** A new one with instrumental music, sound effects, and long traffic reports. (Lula)

**K Mart Radio-** Stone Cold programs rock oldies. (Belfast)

**KRMI-** The ex-WRMI rock and novelty music station sometimes switches call letters. (None)

**Nexus One-** Their tests may soon result in listener contact, so stay tuned. (None yet)

**Radio Cochiquaz-** They're the best heard South American pirate in North America, operating about once a month on 6950 kHz in lower sideband. (Santiago)

**Radio Metallica Worldwide-** Yes, Dr. Tornado's rock and commentary really come from a 15 kW transmitter. (Blue Ridge Summit)

**SWRS-** This Euroirate still puts a decent signal into North America on 11470 kHz during the evening, with relays of many other pirate stations. Try 21800 kHz during the daytime. (Wuppertal)

**Voice of Anarchy-** Leonard Longwire, during a protest song program, said he may change his station name soon. (Blue Ridge Summit)

**Voice of Prozac-** The relaxation station has

resorted to dead air between rock songs. (Pittsburgh)

**WACK-** Sort of like WSKY, this is a well produced commercial-style rocker. (None, call their announced toll free number)

**WBIG-** Big Mike has been active lately, mainly with rock music. (Belfast)

**WHYP-** The James Brownyard memorial station is notable for its Lake Erie region weather reports. (None, verifies some logs in *The ACE*)

**WKND-** Radio Animal plugs pirates and dogs, not necessarily in that order. (Blue Ridge Summit)

**WLIS-** Jack Boggan still lives interval signals. (Blue Ridge Summit)

**WMFQ-** A station for the QSL chaser. (Providence)

**WMPP-** Techno rock music, a solid signal, and no contact with listeners. (None)

**WSKY-** A professionally produced rock music station; they sound commercial. (Belfast)

**WSRR-** Dr. Love plans a new web service for Solid Rock Radio; look here for details soon. (Belfast)

**WWRB-** The Westside Radio Broadcasting station emphasizes comedy. (Lula)

**WVFR-** The calm announcer on Virtual Free Radio discusses politics, religion and philosophy amid sound effects. (Belfast)

Reception reports to pirate stations require 3 first class stamps for USA maildrops or \$2 US to foreign addresses. Send your letters to PO Box 1, Belfast, NY 14711; PO Box 28413, Providence, RI 02908; PO Box 109, Blue Ridge Summit, PA 17214; PO Box 25302, Pittsburgh, PA 15242; PO Box 24, Lula, GA 30554; PO Box 293, Merlin, Ontario N0P 1W0; Casilla 159, Santiago 14, Chile; and Postfach 220342, 42373 Wuppertal, Germany.

### ■ Thanks!

Your input is always welcome via PO Box 98, Brasstown, NC 28902, or via the e-mail addresses atop the column. We appreciate material sent in this month by John T. Arthur, Belfast, NY; Shawn Axelrod, Winnipeg, Manitoba; Ranier Brandt, Hoefer, Germany; Jerry Coatsworth, Merlin, Ontario; Ross Comeau, Andover, MA; Joe Filipkowski, Providence, RI; Bill Finn, Philadelphia, PA; Harold Frodge, Midland, MI; Paul Giffin, San Francisco, CA; William Hassig, Mt. Prospect, IL; Greg Majewski, Oakdale, CT; Armando Masrapa, New York, NY; Joe Oldenburg, Appleton, WI; Adrian Peterson, Indianapolis, IN; Mike Prindle, New Suffolk, NY; Al Quaglieri, Albany, NY; Martin Schoech, Merseburg, Germany; Lee Silvi, Mentor, OH; Bud Stacey, Setsuma, AL; Chris Smolinski, Westminster, MD; DJ Stevie, Basel, Switzerland; Niel Wolfish, Toronto, Ontario; Dave Zantow, Janesville, WI; and Dr. Zaius.



## Natural Radio – An Introduction

**R**adio signals were first sent by inventors in the late 1800s using primitive spark gap transmitters, right? – Wrong! Radio signals have existed since the dawn of time. These earliest signals were not logical, keyed transmissions that carried intelligence, yet they were – and are – electromagnetic signals that can be heard hundreds of miles away from the point of origination. Of course, I’m referring to Natural Radio – the study of signals generated by the Earth itself.

Natural Radio has received heavy coverage over the past five years. It has been discussed in educational TV programs, on National Public Radio (NPR), and was even featured in the *New York Times Syndicate* science column, *GeoFacts*. Within the radio hobby, many are saying that we’ve entered the “Golden Age” of Natural Radio.

Although many listeners have known about the “big four” of Natural Radio for years – Sferics, Whistlers, Tweeks and Dawn Chorus – it has become more convenient than ever to tune in to these signals. Easy-to-build receiver circuits have appeared in hobby publications and on the Internet, and several commercial receivers are now available. (Future columns will explore many of these listening options.) Today, we also know far more about the mechanisms that cause these signals than we did just 20 years ago.

### ■ Timeline: 1919

During World War I, a common mode of communication was the field telephone. Troops routinely laid down miles of wire to link command posts together via a “twisted pair” circuit. Before long, it was discovered that field telephones could be easily “tapped” by an enemy using rather simple equipment. The scheme involved connecting a high gain audio amplifier to two stakes driven in the ground near the telephone wires, but separated from each other by a short distance. In this way, no physical connection to the wire was made, and the risk of discovery was minimized.

Trouble was, every now and then the operators of this tapping equipment heard strange sounds in their headsets. Usually,



*WWI soldiers were among the first to encounter whistlers*

these were described as “whistles” with a steadily falling pitch. Upon hearing the sounds, some operators believed they were hearing falling bombs at the battle front! After some technical investigation, however, it was generally agreed that the whistles were merely a result of equipment malfunctions.

It wasn’t until the early 1920s that scien-

tists studying the “whistle” problem discovered an amazing truth – these were naturally occurring *radio* signals occurring on audio frequencies. They still didn’t know what caused the signals (that would take another three decades) but it was a start.

Before we can delve much deeper into natural radio, we need to define the most common signals that can be heard on these



"lowest-of-the-low" radio frequencies. Following is a brief introduction to the "big four" sounds of Natural Radio, as well as explanations of why they are believed to occur.

### ■ Sferics (Radio Atmospherics)

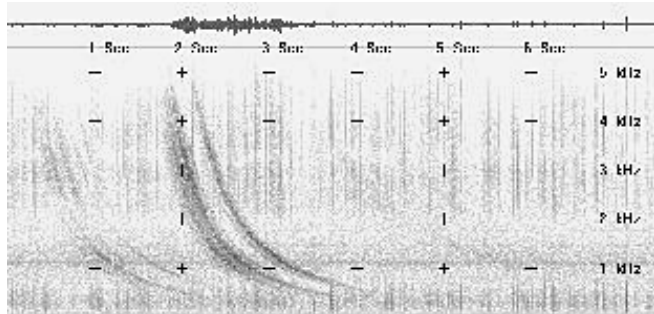
These are the familiar "static crashes," clicks and pops that we all complain about when trying to snag a weak utility station. Each sferic represents a lightning discharge, and their presence often indicates a greater probability of other natural radio sounds being heard, especially when heard during a solar disturbance. Use common sense when listening to sferics. If they become very strong, it's time to shut down and wait for the storm to pass!

### ■ Whistlers

Whistlers are the best known of all natural radio sounds. They produce a falling pitch that lasts from one to several seconds, depending on the distance the signal has traveled. The whistling note can range from a nearly pure tone to a coarse, "breathy" note.

It's well known that lightning gives birth to whistlers, but it is the interaction between lightning, the Earth's surrounding magnetosphere, and the charged particles from the Sun (Solar Wind) that combine to give us the spectacular sound of a whistler.

Briefly, here's how the process works: During a solar disturbance, the Earth's magnetosphere is bombarded with higher than normal amounts of the Sun's charged particles. Besides visual effects such as Aurora Borealis (Northern Lights) and Australis Borealis (Southern Lights), these charged particles can also create ionized trails or "ducts" along the magnetosphere's lines of force, allowing improved electrical conductivity.



Steven McGreevy's spectrogram of strong 2-hop whistler (and a weaker one) recorded in northern Nevada on 19 April 1996 at 2358 UTC. A wav sound file for this and other sounds of natural radio may be found on McGreevy's website at [www.triax.com/vlfradio/natradio.htm](http://www.triax.com/vlfradio/natradio.htm)

Lightning's RF (radio frequency) energy can use these enhanced ducts to travel far out into space, ultimately returning to a conjugate point in the opposite hemisphere. Under the right conditions, a listener near this "landing zone" may be treated to the sound of a short, "one-hop" whistler.

A "two hop" whistler occurs when the lightning's RF energy is reflected back into the ionized duct, returning to a spot near the originating stroke. This often results in a proportionately longer (but weaker) whistler that is audible to listeners near the origination point. It is possible for this flip-flop process to occur many times, producing progressively longer and weaker whistlers.

A mechanism called *dispersion* is responsible for a whistler's dropping note. Since the higher frequencies travel slightly faster than the lower ones, they reach the receiving station first, followed by progressively lower frequencies. The farther a whistler has traveled, the more pronounced the dispersion effect will be.

### ■ Tweeks

Tweeks are mostly a nighttime phenomenon occurring below 5 kHz. They occur when lightning's RF energy travels within the natural waveguide formed between the Earth and the D and E layers of the ionosphere (approximately 40 to 70 miles above the Earth).

Tweeks produce a very short pinging/chirping note that rarely lasts more than a fraction of a second. The cutoff point of these rapidly descending notes (usually around 1.5 kHz) represents the lowest frequency at which the dimensions of the waveguide can support the RF energy. (Science has proven that the dimensions of a waveguide must be more than a half wavelength of the RF energy to be carried.)

The dropping pitch of tweeks is caused by the dispersion effect described earlier for Whistlers, but it occurs *within* the ionosphere.

### ■ Chorus

Chorus is named for its cacophony of overlapping squawks, whoops and chirps that rise in frequency. They sound very similar to flocks of birds singing at sunrise. This phenomenon is believed

to be caused by pulsations in the Earth's magnetosphere during very active solar storms. Often, chorus signals will come in distinct waves, rising and falling in intensity over the period of just a few seconds. These are known as "chorus trains."

Chorus events are somewhat rare, but the best time to listen for them is generally during a solar storm and in the early morning hours. It can also occur at night, especially when there is visible Aurora over the Poles. As with most natural radio signals, the closer you are to the North or South Pole, the more frequent and intense the chorus activity will be.

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## Audio Enhancing Devices

**T**his month we will take a close look at audio enhancing devices that will wring more performance out of your shortwave receiver. We will concentrate on shortwave receiving systems, since scanners utilize FM and really won't benefit from any of the devices we will be covering in this column.

Back in 1991, Sheldon Harvey interviewed me for a radio show he hosted on Radio Canada. He wanted me to predict what direction commercial SW receiver manufacturers would take in the upcoming years. What features would be the "hot items" for the next generation of SW receivers?

Without hesitation I replied that digital signal processing (DSP) would be the focus of every receiver manufacturer for the foreseeable future. In the 1980s, manufacturers overcame the problems associated with analog receiver tuning methods by adopting digitally synthesized receiver tuning schemes. Not only were these new sets extremely stable, their dial accuracy was greatly improved. These synthesizers could produce a very accurate local oscillator signal, which led to the widespread use of digital readouts on even the low end SW receivers and ham radio gear.

The next logical step was to add DSP to the receiver to overcome inherent problems with internally generated noise, external noise and interference. While there is a mystique regarding DSP techniques, the real truth about how DSP works and its benefits are quite simple.

In a nutshell, DSP takes a signal out of the

analog time domain and places it into a digital frequency domain through the use of mathematical formulas. Obviously, exactly how DSP works is way beyond the scope of this article. After all, you don't have to know how to design an automobile in order to drive one. The same can be said of DSP technology. While the mathematics behind DSP is daunting, you don't need to know how to perform the calculations in order to enjoy the benefits of DSP in your receiver.

Thankfully, several commercial companies manufacture outboard DSP filters for receivers. Probably the least expensive one is a DSP unit from Radio Shack (Fig #1), which is no longer manufactured. However, you can occasionally find them at ham radio flea markets for around \$20. Although this unit is inexpensive, it does work quite well filtering out unwanted signals from your receiver's audio path.

The Radio Shack unit plugs into the audio output (earphone jack) of your receiver. Supply 12 Vdc to the unit and you're in business. The unit has a built in amplified speaker and you can also plug a set of headphones into the DSP filter, which mutes the internal speaker.

The controls on the front are easy to use and follow common sense. The unit functions as a CW filter (this is not a DSP function, but rather an active CW filter based upon proven IC active filter technology), SSB filter and heterodyne filter. The latter two incorporate DSP technology and can do wonders on weak, hard to read signals.

MFJ has several DSP add-on filters available. Their high end Model MFJ-784-B (Fig #2) is a good performer offering tunable and programmable "brick wall" DSP filters at a

price of only \$249.95! This MFJ unit (which couples to the audio output of your receiver or ham transceiver) has the ability to automatically eliminate heterodynes, reduce noise and interference simultaneously on SSB, AM, CW, packet, AMTOR, PACTOR, RTTY, SSTV, WeFAX, FAX, weak signal VHF/EME (Earth-Moon-Earth bounce) and satellite signals.

Filter response is an astounding 57 dB attenuation at 75 Hz away from the signal source! The filtration consists of five separately tunable bandpass filters that can be optimized for SSB, CW and AM. Bandwidth is variable to help eliminate unwanted signals and heterodynes within the passband of the filter.

Multiple heterodynes are eliminated by the automatic notch filter which constantly searches for interfering heterodyning signals. The autonotch feature also incorporates varying degrees of "aggressiveness" to insure that heterodynes are detected and attenuated quickly, with no interdiction from the operator. This filter also includes an adaptive noise reduction mode (that works in all filter modes on all random noise) which virtually eliminates background noise and QRN to the point that SSB signals sound like FM!

In addition to all this, the MFJ 784-B offers five factory set and 10 user programmable filters that can be used to really clean up an incoming signal. You can even use two programmable filters together (set one for space and one for mark on a RTTY signal to enjoy a very narrow teletype passband which will greatly reduce garbling of the text). There is also an AGC (automatic gain control) circuit to keep the audio output at a constant level.

Do I like the MFJ-784-B? Oh, yeaaaaaaah! I regularly use it coupled to the audio output of my Heathkit SB-310 SW receiver. This particular tube-era SW receiver is one of the best ever produced (for the money) and the MFJ-847-B certainly does an outstanding job of enhancing this receiver's already great performance.

A true test of how well your DSP filter works is to listen to 49 meter SW broadcasts in the winter time. The QRM (interference) is so bad on 49 meters that many times even the high power SW outlets suffer from poor



**FIG 1:** The Radio Shack DSP unit is still available at hamfests for \$20-25. It's small, easy to use, runs on 12 Vdc, and has a built-in audio amp and speaker. Perfect for the Ten-Tec PM-3A vintage QRP rig, which is almost useless otherwise on today's crowded bands.



**FIG 2:** The MFJ 784-B DSP filter will add DSP to your existing receiver/transceiver at a fraction of a new radio with DSP built in. I use mine exclusively with my Heathkit SB-310 SW receiver.

signal quality in their respective target areas. I find that my SB-310/MFJ-784-B combo allows me to listen for DX stations on 40 and 49 meters with no problems at all. The instruction manual for the 784-B is a bit intense, but once you learn how to optimize the filters and use the set effectively, you won't want to be without it. The MFJ-784-B is a surefire winner in my book.



**FIG 3:** MFJ's 781 DSP unit is designed exclusively for multimode data controllers. My 781 is sitting atop the MFJ 1278-B MMDC, which is coupled to my Ten-Tec Argosy-II for HF packet, PACTOR and RTTY modes. A clean, noise-free signal is the key to HF data.

MFJ also manufactures a DSP filter that can be added to any multimode data controller (MMDC). The Model MFJ-781 (Fig #3) is a smaller version of the 784-B that is designed specifically for the data lover. I use my 781 in conjunction with my MFJ 1278-B MMDC and have great fun copying RTTY, AMTOR, PACTOR, HF packet, and WeFAX transmissions.

The name of the game in data communications is "signal-to-noise ratio." In order to maintain good, error free (garble free for RTTY) communications, you must insure that the incoming signal is free of noise and fading and the signal is well above the established noise floor of the receiver and associated band noise. DSP techniques offer up to a 20 dB advantage to the digital communicator.

Using a DSP filter in conjunction with a MMDC can enable the operator to copy signals well down into the noise. As a matter of fact, DSP techniques are regularly used in SETI (Search for Extraterrestrial Intelligence) installations as outlined in the May issue of *MT*. The brick wall DSP filters contained in the MFJ 781 will greatly improve your digital communications station. At only \$129.95,

the MFJ-781 is a steal of a deal.

Quantics, PO Box 2163, Nevada City, CA 95959, offers the W9GR DSP-3 filter kit for only \$168 plus s/h. This DSP unit has been featured in the ARRL handbook and offers adaptive noise filtering, automatic notch (heterodyne removal), tunable CW filters, narrow SSB/RTTY/SSTV filters and will decode CTCSS and DTMF data. This kit includes all parts, PC board and custom case. Not a bad deal for the price, *and* you get to build it yourself, which is always a kick. Check the W9GR DSP-3 filter out on their web page: <http://www.oro.net/~w9gr/www.oro.net/~w9gr/>

While we haven't dissected DSP filtering techniques on the engineering level, it should be relatively apparent that outboard DSP filter units can greatly enhance your current SW or HF ham radio rig. This technology is readily available, and the cost has been reduced over the last several years to where you can now purchase an outstanding DSP filter for very little cash outlay.

If you are serious about HF communications, whether it is analog or digital data, there is a DSP filter that will help you. Until next time, remember to Keep It Simple.

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## Update on Computer Networking - II

**T**he June-98 and Sept-98 *Experimenters Workshop* columns detailed the ingredients and procedures to network two or more computers for a synergy not unlike cold-fusion in a goldfish bowl. No kidding – networking is The Force, especially in radio!

Although the principles and basics in my two articles remain current, this year networking got cheaper, easier, and more powerful.

### ■ Cheaper?

Dual-speed 10/100 Mbps PCI network interface cards (NIC) from LinkSys cost \$25; others as low as \$9. Ethernet hubs start at \$25. Category 5 UTP (Universal Twisted Pair) network cable is less than \$0.07/ft in quantity. RJ-45 plugs are \$0.25 ea..

The only networking component that hasn't dropped in price is RG-58/u coaxial cable, but that type of network (10Base2) isn't recommended anymore because UTP (10BaseT) has more benefits and capabilities than coaxial cable.

Coaxial cable networks can be upgraded with a hybrid Ethernet hub that has a BNC port. For home networks that won't ever connect to the outside world, it doesn't matter, but if external connectivity is important (Internet), then UTP cable and an Ethernet hub are the prime requisites. Fortunately, these components are inexpensive.

### ■ Easier?

Before 1995, networks were both pricey and hairy, but Windows 95 gave networking a quantum leap with simpler installation and reduced costs.

Windows 98 made networking easier yet with improved "plug'n'play" capabilities. The June-99 release of Windows98 Second Edition (Win98SE) is even better with a powerful feature that I'll introduce just ahead.

Networking two or more computers is within the grasp of the hobbyist, even starting from scratch. There are books (<http://www.amazon.com> and <http://barnesandnoble.com>) to guide even the greenest neophyte to success, but the following web sites have all you need to know about networking (for free):

<http://www.timhiggins.com/>

<http://www.helmig.com/>

<http://hdallen.home.mindspring.com/>

### ■ The Power of Networking

This month, we explore a powerful new concept – Internet Connection Sharing (ICS) – actually, not new in the strictest sense, but new to the casual "joe."

ICS resembles modem sharing. Say you have three networked computers, a modem, and an Internet account. ICS will allow the Internet connection to be simultaneously shared! You probably already know that printers can be easily "shared" among networked computers. Modems can't be "shared" in the same way, but ICS amounts to the same thing.

The new Windows98 Second Edition comes with Internet Connection Sharing as a built-in feature. It's dirt-simple to set up and operate. But first, you need Win98SE, \$180 (full version); or \$89 (upgrade for prior Windows versions). But get this: if you have the first release of Windows 98, the upgrade to Win98SE is available directly from Microsoft for \$25, ppd. See: <http://www.microsoft.com/windows98/highlights/windows98se.asp>

Other ways to share an Internet connection are also available.

### ■ Internet Connection Sharing

Back in the "olden" days, my family had one PC per person with one modem per PC and one phone line per modem. The cost and complexity were enormous, but I wanted my kids to have the power of networking, not only in the home, but also on the BBS networks and the Internet. Something must have worked – one of the kids graduated high school as valedictorian and the other just missed it by a hair. My valedictorian went on to a tough college where this spring she earned her BS degree in electrical engineering. Neither of the kids are "brainiacs" – they're just plain ole hard-workers. And networking had something to do with their success.

During that period, faster and faster modems constantly came to market, from 9600-bps, through 14.4, 19.2, 28.8, and 33.6-kbps. I couldn't afford to buy new modems every few months, so I found an alternative called "proxy server" that, in effect, allowed a single modem on a networked PC to be shared by other networked computers. The WinGate proxy server that I used is now in version 6.x. For more info on WinGate, see: <http://www.wingate.com/contact.htm>. Another popular proxy server, WinProxy, can be found

at <http://www2.winproxy.com/>

There are two kinds of software-based ICS methods; first the aforementioned "proxy server." The other type is NAT (network address translation). The ICS feature in Win98SE is the NAT type. I don't have the space to explain the differences between the two, but each is good. A good NAT-research site is [http://www.uq.net.au/~zzdmacka/the-nat-page/nat\\_windows.html](http://www.uq.net.au/~zzdmacka/the-nat-page/nat_windows.html). SyGate and NAT32 are the most popular of the NAT types of ICS, so check these two sites: <http://www.sygate.com/why/why.htm> and <http://www.nat32.com/>

Proxy servers and NATs, including Win98SE's ICS, are software methods for operating several computers through a single Internet connection. That connection isn't limited to analog (phone-line) modems, either. In fact, integrated services digital networks (ISDN), cable-modems, and digital subscriber line (DSL) or asymmetrical DSL connections work just fine with proxies and NATs, too!

Most Internet service providers (ISP) don't care if you run multiple computers through their connection because the speed/bandwidth doesn't change. Whether you have one or three simultaneous downloads through a 56-kbps modem, the ISP still provides just 56-kbps. The throughput per computer, with three downloading, is one-third, or about 18.7-kbps.

Not to worry, Internet connection sharing resembles a trunked radio system in that it's not likely all terminals will be active at any given instant. If three people on your LAN are browsing the Web, chances are at any moment, two will be reading and not downloading. It probably doesn't make much sense to share a 56-k modem with ten computers, though. On the other hand, ten PCs on DSL or a cable modem will still surf like greased lightning.

I hear that SyGate and NAT32 are more powerful and feature-rich than ICS in Win98SE, but I'm delighted with Win98SE for its increased speed, stability, robustness, and the slick ICS feature. It works flawlessly on my 10-mbps cable-modem connection.

### ■ ICS in WIN98SE

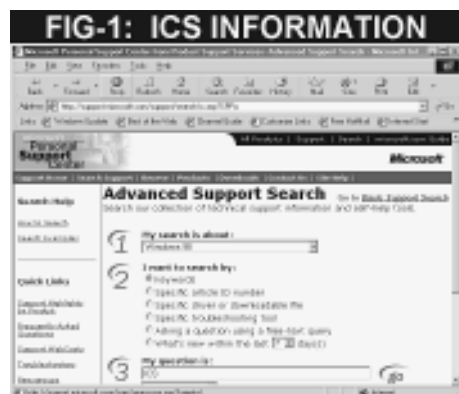
ICS operation under Win98SE is transparent. Requirements are negligible to minimal. Worst case is if the Internet connection is a DSL or cable-modem where two network interface cards (NIC) are required in the "shar-

ing server PC.” One network card is required to connect to the LAN and another to connect to the DSL or cable-modem.

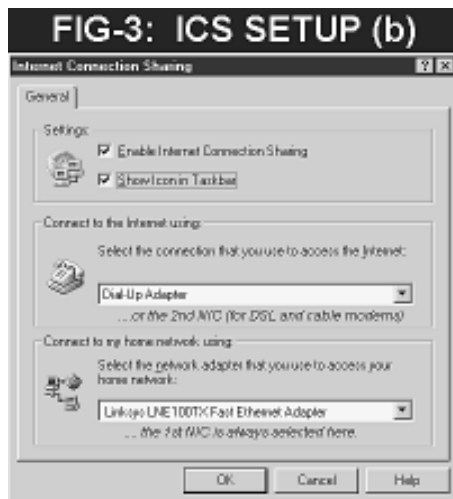
If the connection is an analog modem, you’ll need just one NIC for the LAN. Win98SE’s ICS automatically senses and uses the “dial up adapter” and modem. When someone on the LAN clicks a web site, the modem autodials the ISP and logs on, if not already on line. An inactivity time-out closes modem connections as needed.

References for ICS that go beyond the standard Win98SE Help include the ICS.TXT file in the \tools\mstutil\ics directory on the Win98SE CD-ROM. Also see the ICS articles at the Microsoft Personal Support Center at: <http://support.microsoft.com/support/search/c.asp?SPR=> Use Fig-1 to find over 40 helpful articles. Fill in the information as shown and click [Go].

ICS can be installed along with Win98SE or anytime thereafter. If you make a mistake in the setups, just uninstall and reinstall it via: Control Panel | Add/Remove Programs | Windows Setup | Internet Tools. Check (or uncheck) the Internet Connection Sharing box to install (or uninstall) ICS.

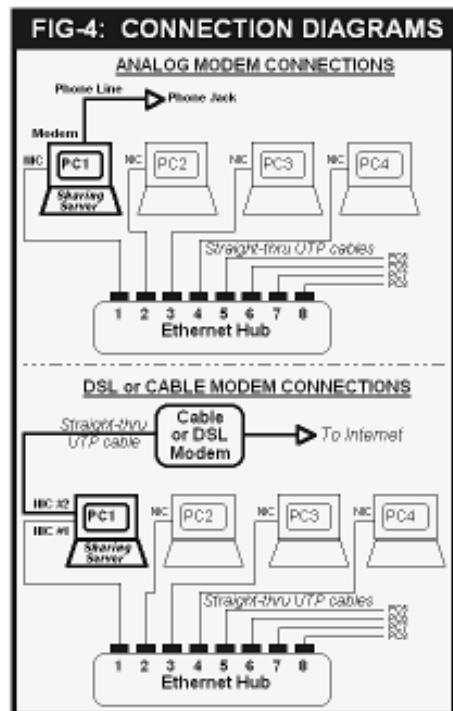


When ICS is first installed, a “wizard” walks you through the setup. Subsequent setups and changes can be done via Control Panel | Internet Options | Connections | as seen in Fig-2. After choosing the type of connection, click the Sharing button at the bottom to see the remainder of the setup. Fig-3 shows the setup for an analog modem.



For DSL and cable-modems, the “Connect to the Internet using:” dialog box in Fig-3 should show the second NIC instead of the dialup adapter. The first NIC is always selected in the lower dialog box. Figure 4 shows the physical connection scheme for ICS with an analog modem, DSL, or cable modem.

There really isn’t much to sharing an Internet connection or account with other computers. The primary requisite is a network and appro-



prate software, neither of which is prohibitively expensive or difficult. Benefits are enormous.

## ■ Another ICS Method

So far, we’ve discussed software methods for Internet connection sharing. There is also a hardware device called a “router.” Until recently, routers were too costly for the home and small office, but the paradigm is changing. BeadleNet at <http://www.beadlenet.com/> introduced their SOHO-2000 series starting at under \$400. Likewise, UGate at <http://ugate.umax.com/> offers a competitive series of routers.

Hardware methods for ICS are probably superior by virtue of enhanced security and no need for a dedicated computer to be the connection-sharing server. Routers rarely crash, so increased reliability is a plus.

In general, the beginning networker should choose the software methods of ICS for simplicity, low cost, and casual learning opportunities. Hardware methods can come later.

## ■ Conclusion

Internet connection sharing lets everyone in the home or small office have equal and simultaneous access to the Internet via one connection or account. It beats the higher costs and complexity of multiple accounts and hardware configurations. ICS makes it easier to monitor and control others’ access to the Internet, too.

ICS is ideal for the radio monitoring post with two or more computers. There are ten PCs on my LAN with four desktops and two notebooks in my personal work center, any of which are apt to be running radio programs while I’m working at another. It makes no sense to stop what I’m doing to find an Internet computer. All my PCs are “Internet computers,” thanks to ICS.

Access to the Internet and a wealth of information are just a couple of keypresses away, regardless of which computer I’m working at.

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# What is a "DX Antenna"?

Is there really such a thing as a "DX antenna"? Well, actually just about any antenna will "pull in" some DX. A reader once wrote me that he had worked DX on 10 meters using only an unbent paper clip as an antenna! But of course no one claims that a paper clip is a DX antenna.

And most of us have heard of Kurt N. Sturba's famous (*infamous*, you say?) demonstrations that real and plentiful DX can be worked on some rather modest (and strange!) antennas – like for instance a metal grocery cart or a metal lawn chair – and neither "antenna" was elevated above ground level!

But if we want to maximize our chances of hearing or working DX there are some things that can help. Let's talk about DX and how to hear it.

### How Far Away is DX?

At lower frequencies electrical noise severely limits the distance over which we can receive radio signals. Thus, unless the transmitted signals involved are launched with very high power levels, DX on the low-frequency (LF) band and lower is often limited to something like a few hundred miles distance. Reliable, around-the-world propagation is possible if enough power is used at these frequencies, but I think only the military has resources to build the powerful transmitters and giant-sized transmitting antennas required for this.

Going higher in frequency we find that, due to the skipping of medium-frequency (MF) and high-frequency (HF) waves around the world, DX on these bands is often measured in thousands, or many thousands of miles.

In contrast to HF DX, the distances covered for VHF/UHF DX over typical terrain (not from a mountain top or satellite) is likely to be considerably less than 100 miles. So on these higher bands DX often means logging a station in the next town, or the town past that one. The occurrence of unusual propagation conditions such as ducting can extend this distance to several hundred, or to a few thousand miles, but this is an exception to the typical situation.

### Antenna characteristics for working DX

Interestingly, although the propagation characteristics on the various bands are often quite different, the antenna characteristics which support consistent DX communications are the same for LF, MF, and HF as they are for VHF and UHF. The characteristics to which I am referring are antenna radiation-reception (RR) patterning factors: low vertical angles, and directivity.

Low-angle vertical radiation-reception (RR) angles means that the RR pattern of the antenna emphasizes signals arriving at, or leaving the antenna at, angles near the ground rather than those angles heading in an upward

direction.

Directivity is the tendency of the antenna's RR pattern to emphasize signals in one or more particular direction(s) of the compass. The gain thus obtained is achieved by antenna design which reduces gain in non-desired directions, and "focuses" it in the desired direction(s).

### The effects of low vertical-angle reception

On VHF/UHF, low vertical angles in your antenna's RR pattern means that little of the antenna's potential gain is wasted upwards. Thus, a significant amount of the reception capability of the antenna is directed outwards to the antenna's sides and toward the horizon. These are the directions from which the signals you seek usually originate. And so, unless you're talking to someone on a mountain top or in an airplane or spacecraft, an antenna with low-vertical-angle RR patterning will help you maximize both your local and your DX VHF/UHF reception.

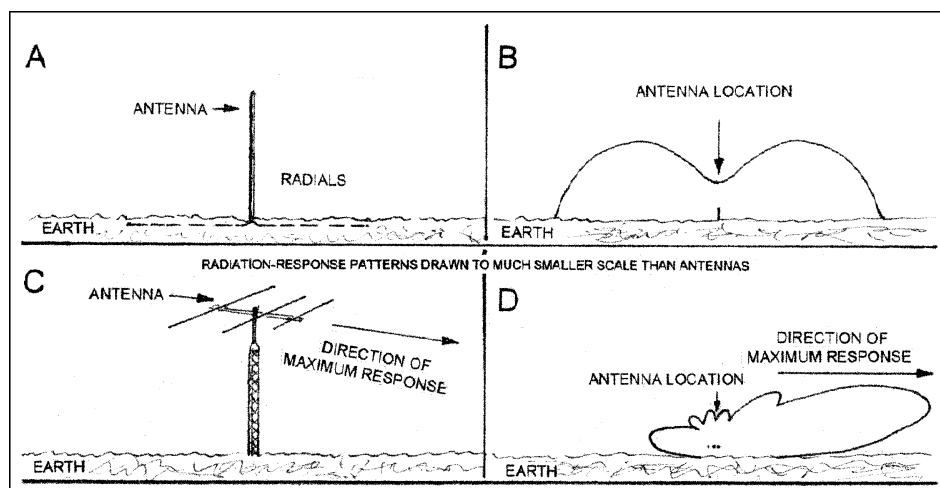
Communications at low frequency (LF) and lower tends to be via ground waves, and therefore low radiation angles are desirable for these frequencies also.

On MF and HF we also profit from low vertical angle radiation when working DX, but for different reasons than mentioned above. At these frequencies, DX radio waves arrive at our antenna having been reflected (refracted) from the ionosphere. DX waves have encountered the ionosphere at low angles. They are reflected at something like the same low vertical angles, and arrive at your antenna at those angles. Thus MF and HF antennas with good low-vertical-angle response make good DX antennas.

### The effects of directivity

Directivity does two things for your DX work. First it concentrates the responsiveness of your antenna in one or more specific compass directions, and thus increases the antenna's gain in those directions. Secondly, a directional antenna responds less well in its non-favored directions than will a nondirectional antenna. And so it receives less noise and interference from those directions than would a nondirectional antenna.

Unless the predominant source of noise



**FIG. 1.** A grounded quarterwave vertical antenna (A) with its radiation-reception patterning (B), and a Yagi-Uda beam mounted a half wavelength above ground – with its patterning (D).

and interference competing with your desired signal lies in the same direction, a directional antenna aimed at your desired signal will improve the signal-to-noise ratio (S/N). This is often a great help in working DX, because many DX stations are relatively weak, and "down in the noise."

Received noise can be quite a problem for DX reception at HF and lower frequencies. At VHF and higher frequencies there is relatively little received noise, but directivity is still useful at these frequencies for increasing the strength of weak signals in order to overcome the noise generated within the receiver itself.

#### ■ Some DX antennas

Fig. 1 shows two popular antennas which are useful in working DX stations. The grounded-quarterwave vertical antenna (fig. 1A) is almost legendary among amateur radio DX operators. Its relative emphasis on low vertical-angle signals (fig. 1B) accounts for this popularity. Some other verticals, such as the half wave and 5/8 wave, give an even lower (flatter) patterning and more emphasis to low-angle performance.

The Yagi beam antenna, more properly called the "Yagi-Uda" beam in its typical configuration, is shown in fig 1B. At frequencies of 10 to 15 MHz and higher, the Yagi-Uda is a nicely directive antenna which can be made small enough to be conveniently rotated by motorized remote control. Elevated a half wave or higher above electrical ground, this antenna shows a good amount of low vertical-angle signal in its RR patterning.

Another beam antenna which sees a lot of DX service is the cubical quad. One desirable feature of the quad is that a two-element quad has only a little less gain than a three-element Yagi-Uda. The quad is also a more forgiving of being less than a half wavelength above ground than is the Yagi-Uda.

### ✱ RADIO RIDDLES ✱

#### ■ Last Month:

I asked "Why is an antenna like the Beverage, which performs so well for reception, not also used for transmitting? Or is it? Or does it perhaps violate the principle of reciprocity?"

Well, Beverages do not violate reciprocity. As we said last month, their excellent directivity gives such a good S/N that they are valuable for reception even with very low gain.

It is true that we seldom hear of the Beverage being used for transmitting; the primary reason being the antenna's very low gain. Nevertheless there have been instances where this antenna was used for transmitting: arrays of several Beverages were used to provide more gain level and still retain the antenna's excellent directivity.

#### ■ This Month:

Speaking of DX, what is the minimum transmitter-input power required for DX communication? Is it closer to 50,000 watts, 5,000 watts, 500 watts, 50 watts, 5 watts, .5 watt, .05 watt, .005 watt, or is this even a sensible question? And what do antennas have to do with it, anyhow?

You'll find an answer for this month's riddle, and much more, in next month's issue of *Monitoring Times*. 'Til then Peace, DX, 73



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## Clandestine Radio

**H**ow many hams do you know who must keep a low profile? Unfortunately too many of our brother and sister hams are required to keep their hamming low key in order to please neighbors, family or landlords.

Today we do not face the problem of receivers and transmitters that require many square feet of space. A good transceiver will fit into even the smallest apartment. The problem today is mainly the antenna.

I think everyone knows about the flagpole antenna and the random/invisible wires. Most who try these schemes agree that they work, but still we long for something better. Better is here!

Two companies offer high performance compact antennas. **Isotron** (137 Manchester Dr, Florissant, CO 80816; 719-687-0650) offers a selection of compact antennas that work extremely well. Inquire from the company for current price. Their web address is [www.catalogcity.com](http://www.catalogcity.com); go to keyword and type in Isotron for latest info on these fine products.

The second company offering a compact antenna called "Super Hi Q Loop" is **MFJ Enterprises** (Box 494 Mississippi State, MS 39762; 800-647-1800 or 601-323-5869 outside US; [www.mfjenterprises.com](http://www.mfjenterprises.com)). The Super Hi Q Loop is remotely tuned to any frequency between 10 and 30 MHz. Street price on this antenna is about \$300. It, too, is an excellent performer.

Either of these antennas will fit into the most compact space you can imagine and should not present a problem for anyone.

A homebrew antenna solution we stumbled across a few years ago is the horizontal loop. A new ham living in a very restricted subdivision wanted to get on all HF bands but was not allowed an outside antenna. He strung a loop in his attic 24 by 44 feet and fed the works with 300 ohm TV feedline. The antenna is less than 20 feet above ground. I heard him talking about this antenna on a local two meter repeater and was surprised when he mentioned having worked and confirmed DXCC (contact with 100 countries) in less than a year using that antenna. During the last ARRL DX contest he worked over 130 countries while running 100 watts!

The loop operates on all bands from 80 to

10 meters. Duplication of the antenna is simple and several other hams have tried it with equal results. The smallest of these loops is only 18 x 20 feet and performs very well, except that it does not load easily on 80 and has a very narrow bandwidth on that band. But for a few dollars worth of wire it's worth a try for those of you with the space.

### ■ Beam Antennas

Low profile beam antennas for the HF bands are few and far between; however, Cushcraft has recently introduced their MA5B, a 10, 12, 15, 17 and 20 meter Yagi. With a wingspan of only 17 feet and a boom length of 7 feet it can be turned with a TV rotor. The forward gain of this little antenna is not up there with the big boys, but any Yagi will give you some advantage over a dipole as far as forward gain goes.

For full details and price on the MA5B contact Cushcraft at their Web site <http://www.cushcraft.com> or via mail at 48 Perimeter Road, Manchester, NH 03103; 603-627-7877.

### ■ VHF/UHF

Operators on VHF/UHF have a bit more leeway, since antennas for these bands are a lot smaller and can easily be taken for TV antennas or concealed in crawl spaces or attics. The main difficulty here is avoiding obstructions that will shadow or deflect signals.

And for the FM operator, vertical antennas for VHF and higher are so common as to be invisible in most cases.

### ■ Another Option

A lot of hams are going strictly mobile to avoid the problems of antenna restrictions etc. I had for several years a favored hamming location on a mountain about 35 miles from my home. I had a long wire strung between some trees, and carried a six and two meter portable beam with me. The external antennas were a big help in working the weak ones that I could not manage with the mobile whip.

Most mobile work is on SSB or FM, but it is not uncommon to work mobile CW hams

today, and the surprising thing is that the mobile hams compete very well with their home station brothers. Some mobile stations are running SSTV and digital modes.

If you are running a "clandestine" amateur station, please drop me a line and tell me about it so we can pass the info onto others (Photos appreciated!)

### ■ Antenna Comparison

In my January 99 column I described the modified Bob Tail antenna (which some folks realized was electrically identical to the Half Square promoted by Clem Small in the same issue). I have had this antenna up for an entire DX season and can honestly say it is the best DX antenna I have ever had for 40 meters.

Compared to a nearby shortened 40 meter beam (two 47 ft. elements at 50 feet) my Bob Tail receives at least the same report when working DX in the favored direction, and most of the time picks up the DX before the beam does. Even through the summer static the Bob Tail has allowed me to work deep South America (i.e., LU and CE) and the South Pacific on 40. The only problem encountered is the inability to rotate the Bob Tail. Since it is aimed in my favorite direction, this is not too much of a problem.

Recent addition of a 20 meter modified Bob Tail has made DXing on that band a lot easier, too. I have room for a second 20-meter antenna at right angles to the original one, which will allow world wide coverage.

### ■ Six Meter FM

During June and early July, a lot of six meter FM DX has been worked here in Eastern Pennsylvania with only my 5 watt Cherokee hand-held and a halfwave vertical; stations through the Midwest, New England and the South Atlantic states and Canada have been easily worked. A lot of the stations worked are using similar set-ups of hand-held transceivers running five watts or less and mobile or fixed antennas. So it seems the influx of new inexpensive six meter HTs is paying off in populating the band.

That's it for September, keep the letters and e-mail coming. 73 de Ike Kerschner, N3IK

## Maxon's High-Quality GMRS 21X

**R**ight now, there are some 42 companies making and/or selling Family Radio Service handtalkies. Industry sources tell me that, to put it mildly, sales are brisk. People everywhere are finding that these diminutive handheld radios are just what they need for staying in touch between cars on a trip, around a campground, throughout an amusement park, and in dozens of other situations.

A case in point: my brother-in-law runs a landscaping firm on Long Island. Previously, he had purchased a dozen Nextel phones (phones which offer both telephone and two-way radio capabilities) for staying in touch with his various work crews. One of his particular problems is communicating between crews on large properties. For example, on large sprinkler systems, it might be a couple of thousand feet between a site where a crew is doing some repairs and the control box where various switches must be activated to test the repair. It's either find a way to communicate, or spend a huge amount of time walking to exchange information.

To his dismay, my brother-in-law found that the Nextel phones didn't always offer coverage where he needed it. To solve the problem, he purchased four FRS radios, and they work very well indeed.

It is examples like these, and the roaring success of the Family Radio Service, that have made many manufacturers think that the next logical step for many users is the General Mobile Radio Service.

Operating in basically the same frequency range as FRS, GMRS offers communications with up to 50 watts transmitter power through repeaters on eight repeater pairs (the output channels may also be used for simplex communications):

	Input	Output
1	467.550	462.550
2	467.575	462.575
3	467.600	462.600
4	467.625	462.625
5	467.650	462.650
6	467.675	462.675
7	467.700	462.700
8	467.725	462.725

In addition, GMRS also allows simplex communications with up to 5 watts power on seven frequencies that are shared with the Family Radio Service:

Channel	MHz
1	462.5625
2	462.5875
3	462.6125
4	462.6375
5	462.6625
6	462.6875
7	462.7125

### ■ The new Maxon GMRS

Recently, Maxon introduced a new GMRS radio, the 21X. Maxon is a company that enjoys a well-deserved reputation for manufacturing quality radio gear. In fact, when I am testing FRS radios, I use a pair of Maxon SP-100G PC-programmable GMRS handheld radios as my "Goldstandard." That is, the 100Gs will always come through even when the FRS radios have run out of steam and can no longer be heard.



*Maxon's GMRS 21X offers superb quality, but short antenna compromises range.*

The Maxon GMRS-21X follows in that same tradition. Measuring just 5-1/2" x 2-1/16" x 1-3/4" (excluding antenna), this radio exudes quality. The molded black case has the same rugged feel as high-end commercial handtalkies. There's a rubber scuff rail wrapped around the bottom so the radio can be set down without slipping and sliding. Packaged in the box are the radio, screw-mount antenna and belt clip, as well as a desktop charger with power supply and two battery packs – a rechargeable NiCd (which offers about 10 hours of battery life) and an alkaline shell that takes four AA batteries. Optional accessories include an ear bud speaker with an in-line push-to-talk switch and microphone, a lapel speaker/microphone with ear jack and a 1/4 wave magnetic mount mobile antenna.

The 21X offers one-watt output on two channels: channel A (462.575 MHz) and chan-

nel B (462.625 MHz). These are both GMRS repeater output frequencies, and simplex operation is allowed on them. The GMRS 21X offers automatic squelch (although there is a monitor button to defeat the auto-squelch) and a dual-color LED for identifying transmit and busy conditions.

### ■ Quick release, swivel belt clip

An interesting feature of the 21X is a highly innovative belt clip. This spring-loaded gizmo is designed to stay on your belt at all times. A round knob on the 21X slides into a slot on the belt clip and clicks into place. The round knob serves as a pivot when the radio is on the clip, so that if you want to sit down, the radio naturally swings out of the way.

When you want to retrieve the radio from the clip, simply grasp the body of the radio with your fingers, press the release button on top of the clip with your thumb (the result is that your fingers are pulling up while your thumb is pushing down), and "bingo!" the radio pops free. It takes only about 30 seconds to realize that this is the way that all belt clips ought to be.

The audio offered by the 21X on transmit and receive is simply excellent, as I've come to expect from Maxon gear. This radio is, unfortunately, somewhat hampered by the short rubber ducky antenna that comes with it. This antenna is roughly half the size of the antenna offered on the SP-100G, and the resultant range between two 21Xs is about the same as an FRS radio.

Unlike an FRS radio, the 21X does have a detachable antenna, which means that it offers the capability to connect external base or mobile antennas. The use of a pair of one-quarter wave cartop antennas can easily double or triple the range, depending on terrain.

Because this is a GMRS radio, it requires a GMRS license to operate. Current GMRS license fees are \$75 for five years. To find out more about getting your license, phone 1-888-CALL-FCC.

Suggested retail price of the Maxon GMRS 21X is \$199.95, although discounters may have them for less. For more information about Maxon products, phone 816-891-6320, fax 816-891-8815, or visit [www.maxonusa.com](http://www.maxonusa.com).

# A Fascinating ACARS Add-On – Flight Database Plus, v 4.0

I'm sure anyone who has used an ACARS decoder has watched, transfixed, as information from high flying commercial aircraft appeared on their computer screen. Monitoring ACARS is like having a ringside seat on commercial aviation. Well, now there's a new program, called Flight Database Plus, which adds more detail and, in my opinion, a whole lot more pleasure.

The name, Flight Database Plus 4.0, is an indication of the origins of this program: namely, a database of commercial aircraft. In its original inception, Flight Database consisted of aircraft number, information, airline owner, Selcal identification, typical route and aircraft type data.

Rainford Software, the producer of Flight Database, has been providing databases for a number of years. Of course, they are updated on a regular basis as new aircraft enter service.

### ■ So, what's all the fuss?!

If you are using SkySpy 1.5, or the Airmaster ACARS program, Flight Database Plus will easily display additional detailed aircraft information about your ACARS intercept with just a double-click of your mouse.

Let's look at Figure 1. Here we see the SkySpy's intercepted aircraft list at the top of the screen. You should recognize each line as a typical ACARS intercept. These have been monitored on a frequency of 131.55 MHz using an old Yaesu FRG-9600 receiver, a roof-mounted ground plane antenna and over eighty miles away from a major airport.

Even in this form, we can still find the aircraft registration number and flight number. For example, if we look at the highlighted row in the SkySpy screen, we can see that we are looking at aircraft registration No. N648UA, which is currently flight UA0971.

But who is flight 0971? Where have they come from and where are they going? And what type of aircraft is registered as N648UA? This information would make ACARS monitoring much more interesting and add a feeling of "being there."

### ■ Being there

Flight Database Plus answers all these questions, as you can see in the box below, labeled Flight Data Lookup in Figure 1. Now, we can see that this is an United Airlines flight, which originated in Milan, Italy, and is traveling to Washington DC's Dulles airport.

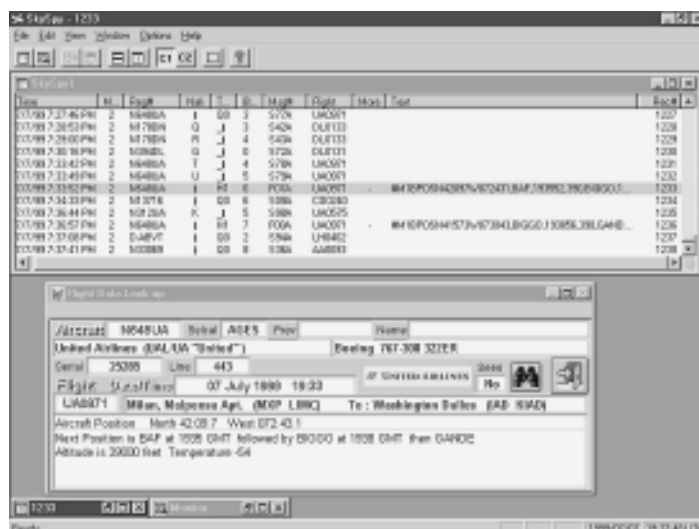
A flight database also shows us that the aircraft is a Boeing 767 with a Selcal of AGES. The Selcal system is a tone activated squelch that allows one particular aircraft to be called, without disturbing other pilots. The Flight Data Lookup screen also displays date and time information, as well as a box in we can indicate if we have actually observed the aircraft at an airport.

Finally, the bottom portion of the Flight screen displays additional messages. In this case, the aircraft's position, altitude, temperature-at-altitude, as well as navigational way-point information, is displayed. Now our ACARS intercept has taken on real-world dimensions and is no longer just a line of data.

The information in the lower box of Figure 1 represents a tiny fraction of the data which is included in Flight's database. Over 34,000 flight numbers, 16,000 aircraft carriers, 200 aircraft types and 28,000 aircraft registrations are included in the database!

### ■ Getting it off the ground

In its basic, manually-entered form, this program requires a Windows 3.1 environment running on a relatively fast 486. The



**FIGURE ONE:** SkySpy 1.4 and Flight Database plus 4.0 doing their thing



**FIGURE TWO:** Flight Database plus 4.0's Main Command Screen



required disk space is 20 MB and 12 MB of RAM. Since the program is supplied on CD, a CD-ROM drive is required. As compared to computers on the market today, these are modest requirements. However, in order to utilize Flight Database Plus with SkySpy, a Pentium with a Windows 95/98 operating system is required.

The program comes on a CD-ROM, but also includes a three and a half-inch floppy disk. The CD-ROM contains the program and data, while the floppy disk contains copy protection files. Installation is fast and simple and requires just a few mouse clicks. The method of copy protection used by this program allows for a limited number of installations. A valid copy protection file must be transferred along with the program in order for it to operate. If this installation is no longer required on a system, copy protection can be transferred back to the master floppy disk. It can then be reused. However, if an installation is erased before the copy protection is transferred back to the floppy disk, the owner has now lost one installation possibility.

The main command screen of Flight Database Plus can be seen in Figure 2. The three main areas are Data Entry, Reports and Edit Databases. You can see the wide variety of reports that can be easily generated (in Figure 2). The program can be used on its own with "keyed-in" data from observed aircraft, or from monitoring of aircraft voice channels.

To input data directly from SkySpy 1.5 we'll choose "ACARS" under Data Entry. This brings the user to a screen which asks the user the location and ACARS decoder program to be used; SkySpy or Airmaster. Flight Database Plus 4.0 then opens SkySpy. When a decoded line is highlighted and double clicked, Flight automatically goes into action. Decoded aircraft data is searched against its database and matches result in the information display seen in the lower part of Figure 1.

It's that simple in concept and operation. And we have not even touched on the database and report features which are equally impressive.

### ■ "Oops"

The program really worked flawlessly. I understand the need for copy protection. But, if you are like me and you are constantly upgrading your system, this can be a problem. The people at Rainford Software responded within hours by e-mail and had me up and going again. And yes, the problem was my fault. I had changed hard drives twice

without transferring the copy protection back onto the floppy disk.

Another thing I observed was that although SkySpy displayed a decoded message, many times Flight Database's screen would say "No data known for this message yet." This required the user to jump between SkySpy and Flight database screens in order to display all the information from an intercept.

### ■ Ya' know what would be nice?

Flight Data Base Plus 4.0 made me spend a whole day ACARS monitoring and being part of the aviation action! Although I have been monitoring ACARS for over five years, this program made it very much more enjoyable for me. But, JFC cannot leave well enough alone.

I would like to see a mode which would allow the Flight to automatically display info as new intercepts occur. This would require a "rolling" multi-screen display, so that more than one aircraft could be displayed. Of course, this feature should be capable of being disabled. Also, compatibility with more ACARS programs would be a plus.

### ■ The bottom line

At 123 pounds sterling (approximately \$190), the price is out of the reach of many aviation hobbyists. A lot of work went into compiling the database. But since commercial aircraft routes and craft change so frequently, expensive updates will be required (about \$80); all too costly for most of us.

Is a reduced featured/priced Rainford product possible which can be sold to a much larger number of airband listeners?

### ■ Ah, it was enjoyable

You should check out Flight Database Plus version 4.0, on Rainford Software's web page:

[http://ourworld.compuserve.com/homepages/Bernard\\_Eccleston/flight.htm](http://ourworld.compuserve.com/homepages/Bernard_Eccleston/flight.htm)

The program is available from Flightdeck the Airband Shop, in the United Kingdom, telephone number 0161-499-9350.

### ■ When is a computer bargain not a bargain?

The painful answer next time when yours truly lets you in on a continuing three month horror story. If you hook up with the wrong characters on the Internet, buying computer equipment can cost you dearly.

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# Uniden BC245XLT Trunk Tracker II

**T**he Uniden BC245XLT is the second generation of portable scanner which can follow conversations in trunked radio systems. It succeeds the 300 channel BC235XLT (see July 1997 MT).

The BC235XLT was revolutionary, but limited. It permitted scanning conventional and a single 800 MHz Motorola trunked radio system, but not at the same time. It wouldn't track Ericsson EDACS (Enhanced Digital Access Communications System) trunked systems, nor trunked systems outside the 800 MHz band.

The new BC245XLT can scan a mixture of conventional and trunked systems. What's more, it can track both Motorola and some types of Ericsson EDACS analog trunked systems in several bands (Table 1).

A new, side mounted connector permits computer control (using third party software) and scanner-to-scanner cloning. Uniden's Smart Scan service lets you connect the BC245XLT to a modem for downloading of frequency and trunk information over a telephone line from a Uniden database server. You will pay about \$1/minute when downloading from Uniden through the 900 telephone number. We didn't test this.

The new BC245XLT is sold with one BP-180, a proprietary 800 mAh NiCd battery pack (Fig. 1). The earlier BC235XLT came with two BP-180 batteries plus a CRX120 auxiliary charging tray. Both models come with a wall wart charger/power supply. A stiff rubber helical antenna, computer cable, and a screw on plastic belt clip are also included.



**FIGURE 1.**  
*Proprietary BP-180 NiCd pack rated at 4.8 Vdc, 800 mAh*

## Basic Features

The Philippine made BC245XLT operates much like the BC235XLT and other mid-line Bearcat models when used to monitor conventional systems. Its 300 channels are allocated among 10 banks and a short rescan delay may be programmed on a per channel basis. A query feature identifies duplicate memory channels.

Various combinations of banks may be scanned, and our BC245XLT scans a mixture of conventional frequencies at 74 channels/sec. Memory scan wastes no time scanning empty channels. Individual channels can be locked out from memory scanning, and a

simple keystroke sequence unlocks all locked channels in a bank.

One channel in each bank can be designated a priority channel and is sampled every 2 seconds. A single pair of frequency limits can be programmed for searching up or down, but searching and priority cannot be used simultaneously. Up to 50 frequencies may be locked out from a limit search, versus 20 in the BC235XLT.

Factory preprogrammed frequencies for police, fire/emergency, commercial air, marine, and weather can be scanned by pressing the SVC key. A new railroad service search facility alternately displays the frequency and railroad channel number. The display alternately flashes the marine channel number and frequency when paused during a marine service scan, as in the earlier BC235XLT. Up to 20 frequencies can be skipped during a service scan, except weather frequencies.

AM and NFM emission modes are selected automatically depending on the frequency and cannot be overridden. Later production runs of the BC235XLT included a global RF attenuator, a feature carried forward with the BC245XLT. Our attenuator measured from 0.4 dB @ 30 MHz to 21 dB @ 950 MHz.

A defeatable Auto Light feature illuminates the display for 2 seconds when the BC245XLT hears activity, an improvement over the BC235XLT.

## Trunk Tracking

The BC245XLT is designed to follow conversations in several types of analog trunk systems, not including E. F. Johnson logic trunking radio (LTR) systems, which must be scanned in the



conventional mode (Table 1). We easily programmed two 800 MHz public safety Type II and one 800 MHz EDACS trunked systems by entering their frequencies.

Programming Motorola Type I or hybrid systems is complicated, because in addition to programming the frequencies, you must configure something called a "Fleet Map." There's no easy way to determine *a priori* the proper Fleet Map unless someone tells you. This was true of the BC235XLT, too.

Each of the BC245XLT's 10 banks can be programmed with the frequencies for a single trunked system, or with frequencies for conventional use, or both. You can follow trunked conversations and scan conventional systems at the same time in the same or different banks.

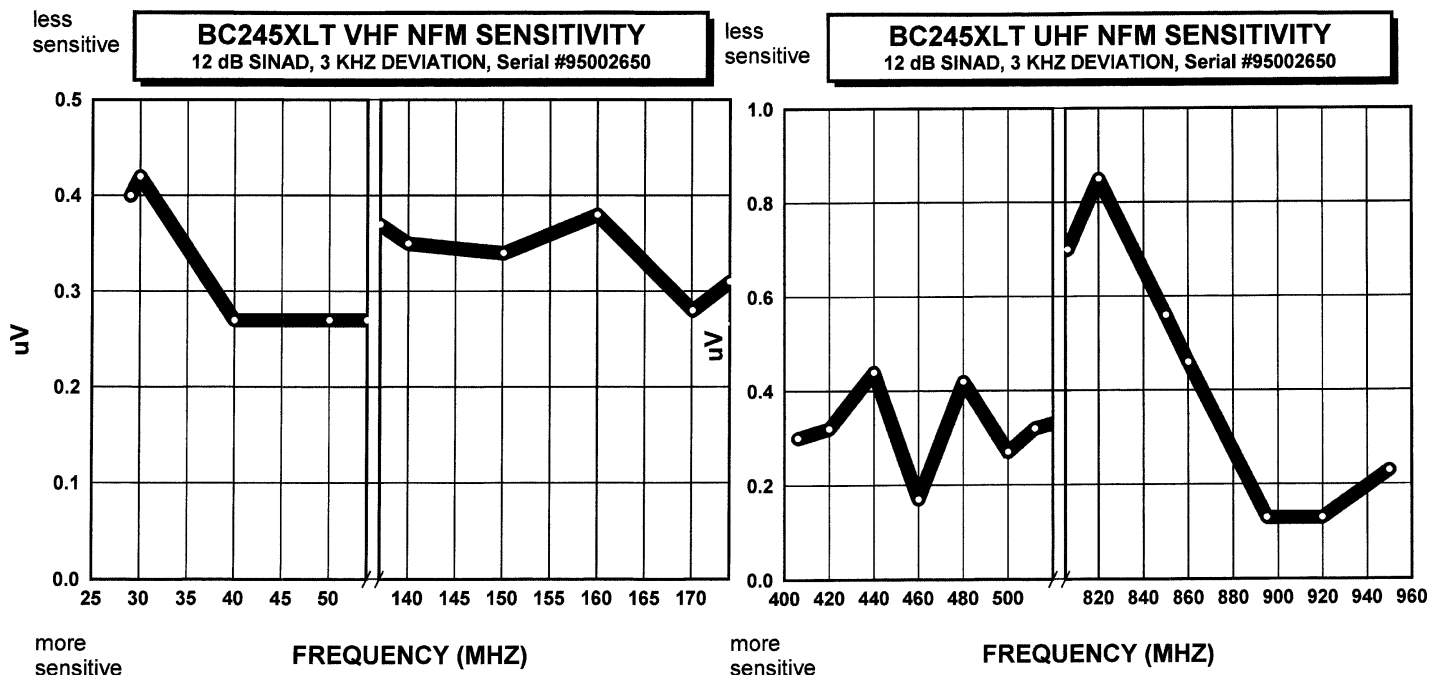
This doesn't work the way we expected. Our radio is programmed with one conventional bank and three trunked banks. If a talk group became active, our BC245XLT refused to scan the other banks no matter how many times we pressed the Scan key. Pressing the Scan key causes the radio to resume scanning, but only within the same trunked bank. Only when there were no more conversations in that bank did our BC245XLT start to scan the other banks.

Uniden designed the BC245XLT's delay, hold, and lockout facilities so operation is very similar in both trunk and conventional domains.

You can search or scan for active talk groups in the trunked domain and lock out up to 200 uninteresting talk groups (versus 100 in the BC235XLT). You can program up to 10 lists per bank with talk group numbers for scanning. Each list can hold up to 10 talk group IDs.

**TABLE 1: ANALOG TRUNKING TECHNOLOGIES SUPPORTED BY THE BC245XLT**

Analog Trunking System	Remarks
Motorola Type II, 800, 900 MHz:	Requires programming base and offset frequencies Requires programming a fleet map (1) Requires programming frequencies in exact order. (2) Cannot track some 900 MHz systems
Motorola Type II, 137-174, 406 - 512 MHz	
Motorola Type I, 800 MHz	
Ericsson EDACS:	



## MEASUREMENTS

### UNIDEN BC-245XLT SCANNER S/N 95002650

Street price \$229.95  
Uniden America Corp.  
4700 Amon Carter Blvd.  
Fort Worth, TX 76155

#### Frequency coverage (MHz):

29 - 54 (5 kHz steps)  
108 - 137 (AM, 12.5 kHz steps)  
137 - 174 (5 kHz steps)  
406 - 512 (12.5 kHz steps)  
806 - 823.9875, 849.0125 - 868.9875,  
894.0125 - 956 (12.5 kHz steps)

#### Sensitivity:

see graphs

#### RF attenuator:

0.4 dB @ 30 MHz,  
21 dB @ 950 MHz

#### FM modulation acceptance:

13 kHz

#### Intermediate Frequencies:

10.85, 0.45 MHz

#### Image rejection:

46 dB at 155 MHz, 46 dB at 858 MHz

#### Audio output power at earphone jack:

126 mW @ 10% distortion into 8 ohms

#### Practical memory scan speed:

74 ch/sec.

#### Search speed, Turbo:

267 steps/sec.

#### Search speed, regular:

80 steps/sec.

#### Current consumption at 4.8 Vdc:

off - 0 mA  
manual - 75 mA  
scan - 74 mA  
full volume - 149 mA

#### Battery saver:

after one minute in Manual.

#### Low battery warning at 4.48 Vdc or less.

Shutdown at 4.29 Vdc or less.

## Performance

Our BC245XLT is fairly sensitive, though weaker 800 MHz trunked signals are accompanied by an odd sounding staccato noise. We cannot determine if this is an artifact generated within the radio.

We detected 10.85 and 0.450 MHz IFs (intermediate frequencies) in the BC245XLT and BC235XLT. Both TrunkTrackers have image rejection superior to previous models with a 10 MHz range first IF. Our BC235XLT exhibited better image rejection than our newer BC245XLT in both the 150 and 850 MHz ranges.

Harmonics of the crystal controlled 10.4 MHz local oscillator were responsible for birdies at 31.2, 41.6, and 52 MHz.

## Other Observations

Data Skip jumps over strong, unmodulated signals. It is disabled when scanning AM aircraft or using priority scan. When scanning trunked systems or a mixture of trunked and conventional systems, our BC245XLT turns off the Data Skip, a glitch not mentioned in the manual.

The Data Skip key is also used to choose what information is displayed while trunking, a fact documented in the manual but not betrayed by the key's label.

Audio output is crisp. Stereo or monaural headphones can be connected through a 1/8" jack on top and audio is heard from both sides. A 10 ohm series resistance is built into the earphone jack to prevent hearing damage



**FIGURE 2.** Side mounted remote port (rubber cover removed for photo)

when using an earphone. You can bypass the resistance to increase the audio output at this jack by connecting the audio shield (the outer metal portion of the earphone jack visible from the top of the radio) to the antenna jack's ground connection.

We listened for, but heard no intermod while using the BC245XLT while connected to a base station antenna.

## Summary

Our BC245XLT worked nearly as advertised. We were disappointed with the Multi Track operation and the use of a proprietary battery pack instead of AA cells. Its trunktracking features, especially the ability to track many EDACS systems, is sure to delight the growing numbers of people who live in areas served by trunked repeaters. For more user feedback, BC245XLT owners share their experiences on the web, at <http://strongsignals.net/bc245xlt>. In all, it's a good radio even if you never press the Trunk key.

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**Q.** When I was a kid I noticed out at the airport that the planes (DC-3's and DC-6's) had a wire antenna from the cockpit to the tip of the tail for their HF radio. They still use HF, so where do they hide the antenna? (Jim Moodie, e-mail)

**A.** According to our Assistant Editor, Larry Van Horn, it is now part of the fuselage (body) in some aircraft. Others use tuned blade type antennas.

**Q.** I recently purchased a Grundig shortwave portable after reading their hype: "German-engineered quality," "German-engineered sound," and "Made by Germany's Grundig." When the radio arrived, the box said, "Made by Grundig in PR China." What gives? (Anne Reed, Cheltenham, England)

**A.** To get a definitive answer, we called the Grundig importer here in the U.S. The radios are, indeed, made in the People's Republic of China, but at a dedicated Grundig facility which operates under strict product control guidelines set by the Grundig home office in Germany. All of their shortwave products are now made in China, although in the past they have been made in eastern and western Europe, Malaysia, Portugal, and even Taiwan.

**Q.** How does an unused telephone drop line (pole to house) work as a makeshift shortwave antenna? (Ken, Hauppague, NY)

**A.** Quite well. It is a random wire at best, with unpredictable directivity, impedance, and performance, but if it is not bothered by a noisy, nearby power line, it should work just fine. As with any shortwave antenna, the key is that it should be high and clear of close metal obstructions or nearby power lines.

If possible, it is best to keep the antenna wire as far from the house and its electrical appliances as possible, feeding the signal to the radio via coaxial cable which is shielded from those interference sources. But a wire

feedline can be used if you are willing to tolerate the electrical interference from computers, answering machines, VCRs, and all those other modern conveniences!

**Q.** Does the High frequency Active Auroral Research Program

(HAARP) in Alaska have a published operating schedule? Is it likely that their experiments are affecting the weather? (Angus Ashdown, Lexington, MO)

**A.** No, and no. Since it is a government

## Bob's Tip of the Month

Instead of carrying around pads of paper, books, and computers, carry a pocket organizer instead. Richard Lipari of Chicago does just that, and says that even after accumulating enormous frequency files from *MT*, published directories, and elsewhere, he still had loads of memory for other functions as well.

### Tip #1: Pocket Organizers and PDAs

And if you really want to step up in the pocket digital world, try a personal digital assistant (PDA); with these high-tech demons, you can instantly swap databases with computers, sort contents, and have even more organizational control of your database.

### Tip #2: Reducing Circuit Noise in Used Receivers

With time, many receivers seem to increase their background noise, generated internally by microprocessors, synthesizers, oscillators, and even power supplies. This can often be traced to corrosion.

If you have a metal-cabinet radio, it may be worthwhile to remove the cabinet screws and examine the surfaces around the screw holes. If the metal is no longer bright, or if

there is paint on the hole, it is a good idea to scrape the area clean for about 1/4" or so with any abrasive (sandpaper, steel wool, knife blade) before reassembling. A small squirt of contact cleaner on the surface will extend the lifetime of the clean surface.

Thanks to Jacques d'Avignon who discovered this simple fix while refurbishing his Kenwood R5000.

### Tip #3: Using Your Car Stereo for Scanner/Shortwave Sound

Portable receivers and scanners have notoriously poor sound in noisy environments such as a moving vehicle. But if your vehicle is equipped with a cassette player, you are in luck. Many chain stores sell cassette adaptors which slide into the transport of your car stereo, and plug into the

earphone jack of a scanner or portable radio. No power is required.

One such device, the Grove ACC79, is only \$5.95 plus shipping from Grove Enterprises. Simply plug the 1/8" mini plug into your radio and enjoy wrap-around sound.

project, they report to an oversight committee, not to the public. Years ago, many high-energy radio experiments were conducted with the intent to modify weather; none worked. There are currently other similar high-energy systems radiating into the atmosphere as part of the worldwide experiment with none affecting our weather. The energy of even the smallest natural weather cells dwarfs such experiments.

**Q. Why don't scanner manufacturers offer dual-band scanners like the ham transceiver manufacturers do? The purpose would allow you to monitor a primary channel while the scanner searches for activity on other ranges. You could choose whether to allow the new signal to override your primary channel even if active, or just when there is no activity on the primary channel. (Bruce Tennant, Long Beach, CA)**

**A.** I don't know; maybe they just never thought about it. They probably figure that the priority feature, which automatically samples particular channels every few seconds, is adequate. The priority circuitry is a lot cheaper because it only needs one receiver board, while the dual-bander requires two receiver circuits running concurrently.

**Q. Is it possible to hear flying saucers on my satellite dish? (Donald Michael Choleva, Cleveland, OH).**

**A.** If flying saucers transmit electromagnetic signals on the frequencies for which the satellite dish is designed to receive, and the signals are strong enough to be received, yes. It really makes no difference what the platform is launching a radio signal, it still is composed of electromagnetic energy and can be modulated either by amplitude or frequency.

The limiting characteristics of the satellite dish are its frequency-determining filters and feed horn, and the directivity of the reflector. That's why it works fine for C band (3.7-4.2 GHz) or Ku band (11.7-12.2 GHz), but lousy for scanners and shortwave receivers.

**Q. Is there any equipment that I can buy that will connect to a Ku**

**band satellite dish so that I can receive SCPC audio? I realize that I will probably have to point the dishes in the correct direction.**

**A.** I'm afraid you're out of luck with Ku band so far as reception of SCPC; that remains the domain of C band and the big ugly dishes! While there is some SCPC on Ku (11.7 - 12.2 GHz), it is generally inaccessible to consumer equipment due to system incompatibility, satellite positioning, and channel assignments.

**Q. How is it possible for Radio Beijing International to go from very strong, readable signals one night to virtually undetectable the next at the same time? (Donald Michael Choleva, Cleveland, OH)**

**A.** Assuming that everything remains the same at your listening post, propagation. We are in the midst of tremendous solar instability as the sunspot cycle grows toward its maximum. Radio Beijing International is a well established, reliable international broadcaster, and it's unlikely that anything but propagation is responsible for such wide differences in reception.

**Q. After a strong electrical storm roared through my area, the "Check Engine" light came on when I started my Ford truck, and the radio would pick up only the strongest local stations. The dealer said that the microprocessor had been knocked out, and my insurance covered the claim. Since there were no marks on the vehicle indicating a direct strike, could nearby lightning have caused the problem? (Mark Burns, Terre Haute, IN)**

**A.** Absolutely. The amount of voltage and current which can be induced by an adjacent lightning bolt is considerable, and is often to blame for knocking out a variety of delicate electronic components. Since the radio still changed frequencies, the microprocessor was not damaged, but since the signals were weak, the jolt fried the RF transistor(s) in the front end of the radio.

The Ford "Check Engine" light comes on from another microprocessor which monitors

a variety of functions throughout your vehicle; it is quite possible that it merely sensed the lightning pulse as a data signal, turning on the warning light. Since the truck ran faultlessly with this light on, I'd opt for that explanation.

Questions or tips sent to "Ask Bob," c/o MT are printed in this column as space permits. If you desire a prompt, personal reply, mail your questions along with a self-addressed stamped envelope (no telephone calls, please) in care of MT, or e-mail to [bgrove@grove-ent.com](mailto:bgrove@grove-ent.com). (Please include your name and address.) The current "Ask Bob" is now online at our WWW site: [www.grove-ent.com](http://www.grove-ent.com)

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## Trunk Following with E-Trax

By Rich Carlson, N9JIG

**E**-Trax is a DOS-based utility which allows tracking of the Ericsson Enhanced Digital Access Communications System (EDACS) trunking systems often used by public safety and business operations in the US. While not as numerous as the Motorola trunking systems, EDACS is a major player in the communications field. Nationwide there are hundreds of commercial and public safety EDACS systems in use.

E-Trax, developed by Joseph Cardani (AMComm), currently operates only with the OptoCom receiver, which *MT* reviewed in May 99, but support for other radios such as the Radio Shack OS456 and Icom radios is in the works.

E-Trax requires regular DOS, not a DOS Window within Windows. It suggests a 486 or better computer. No modification to your radio is required. The Bit Banger feature now included on the OptoCom is not required. I have been successfully running E-Trax on a variety of computers, including:

- IBM Pentium II, 233 MHz desktop (32 MB RAM)
- Compaq Pentium 120 MHz laptop (32 MB RAM)
- Compaq 486 DX4/100 tower (8MB RAM)
- Winbook 486/100 laptop. (8MB RAM)

### ■ Main Features

At first glance, E-Trax seems complicated. Once you read the instructions and view the files, it becomes clearer; after using it for a couple days you'll realize it really is an easy-to-use program. The instructions are easy to read and complete. An MS Word version is available on the E-Trax web page (address below).

The program has several parts. The first is the actual program itself. This is less than 200 K in size.

The second part is the Config file. This tells the computer what kind of radio, what com port is used, etc. The manual tells you exactly how to edit this for proper operation.

The third part is the system file. You will edit this file to tell the radio the frequencies and other information on the system you are going to listen to. Several sample systems are available if you don't have the information needed for the systems you wish to

listen to. Info on many EDACS systems are available on the E-Trax web page.

One of the system files included is the "Initial" file. This is used to figure out the correct channel order used by your system. This is important, since an incorrect order will provide false group IDs. The manual tells you how to edit this with the frequencies used by your system. The freqs can be found in *Police Call* or on various web sites (see p. 20).

You then run the program with the Initial file and follow the instructions to decipher the correct channel order. A second scanner is used to verify the correct channel order. Most, but not all, EDACS systems use the freqs in ascending or descending order.

Once you have the correct channel order, you can start listening to the system. The program shows you Group IDs (GIDs) as they become active. By careful monitoring you can figure out to whom the group the ID is assigned. Many times a unit will identify the group he is using ("22 to 44 on Car West"). If you are lucky enough to be monitoring a system during its installation and testing phase, the techs will often test each group and identify it for you. Once you figure out its use, you can add a title to the Group, called a Tag.

A recent excursion to the Joliet area allowed me to identify six groups in a few minutes. On a busier day I could have done a lot more, but since this was Sunday, the only active groups belonged to the Sheriffs Department.

As you identify group IDs, you can edit the system file and add up to 1000 GID tags. This

should keep you busy for a while. You can also add them to a scan list by editing the same file. You can keep several versions of the same system file with different scan lists to allow for different scanning strategies. Just be sure to name them differently. Being DOS, remember to keep the names to eight characters or less, and do *not* use a file extension (no ".txt" for example).

### ■ Using E-Trax

The program delivers a lot of information on the EDACS system you are listening to. The active frequency, talk group, the name of the group, type of group or conversation, what the control channel is, and status of the program. Talk groups that have not yet been identified are shown as such, so you will be alerted to listen carefully for clues.

The program allows you to monitor a system in several ways. One is to Search; this is similar to searching on a regular scanner in that it will display any active group or call, and display the ID and Tag (if known).

You can choose to track a single group or call, scan a preselected list with or without a scan delay, follow groups only (again with or without delay), or even individual calls only.

After a couple weeks of operation I found the program to be a reliable and efficient way to monitor an EDACS system. In fact, it was the *only* way to track an EDACS

SYSTEM: Camden E-TRAX v1.1a

***** 01 to 14 *****				***** 15 to 25 *****				==LIST==	==DISP==
freq	ch	id	type	freq	ch	id	type		
856.9875	01							124	EC 127
857.9875	02							127	EC 127
858.9875	03	127	GS					128	EC 127
859.9875	04	>> 127	GS					129	EC 127
860.9875	05	127	GS					12A	02 127
								137	EC 127
								138	EC 127
								151	EC 127
								161	02 127
								181	EC 127
								>>	EC 127
									EC 127
									EC 128
									EC 128
									EC 128
									EC 128
									02 127

127 Police Dispatch

STATUS: BUSY MODE: SEARCH ESC KEY TO EXIT 01 002 007 CC: 02

system with a single radio until the Uniden BC245 became available.

While monitoring the Illinois State Police system I was able to track individual groups when interesting activity was heard. I already had a majority of the most active groups IDs, and as new ones were found, I tracked them until I figured out who they were. When I had several new groups identified I stopped the program and added them to the list of Group tags.

The only problems I had with the program were relatively minor, and should probably be called preferences rather than complaints. I would prefer to run the program in a DOS Window, so that other Windows programs could run at the same time. I would also like to see the "F-Key" functions on the screen to make it easier to select options. I found that the default yellow and blue on black screen was hard to see in bright sunlight in my van; an inverted screen color would make it easier to read.

There is no way to edit the system file with the program running, nor are there some advanced features such as hit counts or priority. But, since the program was in-

tended to be as simple as possible and use as little computer resources as possible, I do not consider these major deficiencies. Some of these features may be included in future versions. But, some of these ideas may not be practical for a program of this nature.

I liked the overall layout of the display and the operation of the program. It was easy to edit the group tags and to switch between modes.

## ■ The Bottom Line

Other programs coming in the near future may also track EDACS systems. New versions of Scan-Star are rumored to allow simultaneous tracking of both EDACS and Motorola systems. Since E-Trax is limited to EDACS systems only, it can be optimized for that application and avoid inflating the program to accommodate additional protocols.

E-Trax is a valuable resource for serious scanner users. If you have an EDACS system near you and an OptoCom, then E-Trax is worth the price. When this program supports some of the other radios such as the OS456 and PCR1000, then it will become even more

desirable.

More information, including screen shots, is available on the E-Trax Information Page at <http://www.erols.com/jcardani/e-trax.htm>

E-Trax is available for about \$89.95 from:

Grove Enterprises  
P.O. Box 98, 7540 Hwy. 64 West  
Brasstown, NC 28902  
1-800-438-8155

Lentini Communications  
21 Garfield Street  
Newington, CT 06111  
1-800-666-0908

Optoelectronics, Inc  
5821 NE 14th Avenue  
Ft. Lauderdale, FL 33334  
1-800-327-5912

Rich Carlson is director of the Chicago Area Radio Monitoring Association (CARMA) and editor of *ScannerMaster* *Illinois Communications Guide*



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## Hand-Held Spectrum Analyzer

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The screen displays a spectrum analyzer, a bargraph, or frequency data, depending on the function chosen. A serial or parallel port may be used for computer control, and the trace and display data may be stored in internal memory, while the spectrum and bargraph displays may be fed directly to a printer for permanent recording. All functions are menu selectable.

A flex whip, six AA cells, RS-232C cable, software, and instructions are included. To fully appreciate the convenience and features of this sophisticated unit, you just have to try it, or request full specifications from Grove Enterprises (PO Box 98, Brasstown, NC 28904; 800-438-8155 or [www.grove-ent.com](http://www.grove-ent.com)). The Sperry Spectrum Analyzer sells for \$1999.95.

## Field Strength Meter

Everything is shrinking these days! This little field strength meter from MFJ Enterprises will fit right in your pocket as you tramp around your property checking the relative strength of your antenna field. MFJ-801 includes one telescopic whip and sells for \$19.95.



The slightly larger Deluxe Bipolar meter includes two telescopic whips and can also be used with remote. The MFJ-802 is \$39.95 from MFJ Enterprises, 800-647-1800, fax 601-323-6551, email [mjf@mfjenterprises.com](mailto:mjf@mfjenterprises.com) or write PO Box 494, Mississippi State, MS 39762.

## Craftsman Digital Multimeter

For the do-it-yourselfer or the professional, Craftsman offers a couple of sophisticated new multimeters that can also upload your data to a computer for archiving or analysis.

For testing electronic equipment such as appliances, radios, audio systems, TVs, computers, motors, etc. the Craftsman Professional True RMS Autoranging



Multimeter (#82326) combines a number of functions: It measures ac and dc voltage and current, resistance, capacitance, duty cycle, frequency, inductance, and temperature (optional). Other features include continuity and diode tests, audible warning to protect against improper lead connections, auto power off, and overload protection.

The large LCD is backlit for easy viewing; an auto-sensing hold freezes the display until it can be read or recorded. The internal memory stores eight measurements for later recall in addition to storing highest and lowest readings. A built-in RS-232 PC interface, plus cable and Windows-compatible software, are included for data capture and analysis. The unit is sold at Sears stores for \$169.

Craftsman's Professional Multimeter + Scope (Model #82089) adds a single channel, 100 kHz graphical oscilloscope, which makes it useful for auto tune-up and repairs as well. Check out the additional features of this \$299.99 tool at your local Sears store.

## Ladder Crystal Filters

Crystal filters can be used in shortwave and amateur radios as upper and lower sideband filters, dual filters, adjustable filters, and more. *Ladder Crystal Filters* is a book by John Pivnichny devoted to design and construction of crystal filters using crystals of just one frequency.

The book provides BASIC routines to make the proper com-

putations to build a high quality filter. Simple ways to measure crystal parameters are also provided.



*Ladder Crystal Filters* is 136 pages, \$14.95 in paperback from MFJ Enterprises, 800-647-1800, fax 601-323-6551 or email [mjf@mfjenterprises.com](mailto:mjf@mfjenterprises.com).

## IC Master on CD-ROM

The myriad integrated circuits on market today makes it virtually impossible for the design engineer to specify the ideal component(s) without a comprehensive reference, and this is, indeed, a comprehensive reference! This new, Silver Anniversary edition celebrates 25 years of publishing the directory by featuring more than 152,000 IC part numbers, both current and discontinued, (106,000 new parts in the printed edition) from more





than 350 manufacturers.

Complete electrical specifications as well as pinouts and packaging are included in easy-to-find categories.

The CD-ROM version allows rapid search by keyword, part number, function, specifications, and packaging. Either format (three-volume printed set or CD-ROM) is \$195 including shipping from Hearst Business Communications, 645 Stewart Avenue, Garden City, NY 11530; credit card orders: (800) 833-7138.

## 1999 International Satellite Directory

Subtitled "The Complete Guide to the Satellite Communications Industry," the 14th edition of this 1,400 page 2-volume publication certainly should live up to that claim. The *Directory* covers international and govern-



mental agencies and associations, international standards, launch vehicles and schedules, satellites in orbit and their operators, details on every satellite in geosynchronous orbit including what's on each transponder, uplink facilities worldwide, manufacturers of space and ground equipment, users and providers of satellite services.

If you are in the satellite industry, you may try the *Directory* free of charge. Cost for the 2-volume set is \$275 from Design

Publishers, 800 Siesta Way, Sonoma, CA 95476, 707-939-9306, or visit their "satellite online magazine" at [www.satnews.com](http://www.satnews.com).

Design Publishers also offers an online subscription to "What's on Satellite," providing information on video, voice and data activity on all the world's satellites for an annual \$125.

## S@tellite Modem

The S@tellite Modem OM200 is a printed circuit board from Magellan that allows customers to establish a low-cost two-way



communication channel between their equipment and the ORBCOMM satellite system. The S@tellite Modem is designed to provide maximum flexibility to equipment developers.

The board is available with embedded GPS, configurable digital I/O, built-in functions which are user-configurable, and the standard ORBCOMM serial interface protocol. The S@tellite Modem OM200 has on-board memory that allows it to store outgoing messages from the user equipment for transmission at a later time, and allows it to store incoming messages from the ORBCOMM satellites.

The versatility of the unit makes it useful in applications from remote tracking and monitoring to communications from anywhere on earth via text messaging. For more information, write Magellan at 960 Overland Court, San Dimas, CA 91773 or visit [www.magellangps.com](http://www.magellangps.com)

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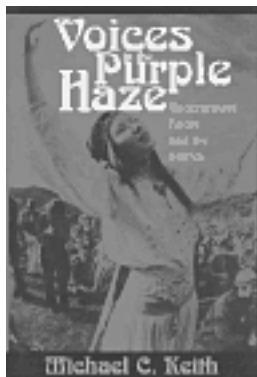
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## Voices in the Purple Haze

Michael Keith, a Boston College professor of communication, has written a retrospective on "Underground Radio and the Sixties" in his book, *Voices in the Purple Haze*. Interviews with over 30 participants in the "anti-top 40" radio stations tell it like it was. The book also points out what happens when counterculture becomes a success, as it did in just a few short years.

*Voices in the Purple Haze* was published in 1997 by Praeger Publishing. The 224-page paperback is discounted at Amazon.com for \$18.36.



## Howlin' on the Air

Speaking of the 60s, a CD



which packs a lot of nostalgia for some baby boomers is "The Legendary Wolfman Jack: Howlin' on the Air." The CD brings back the days of XERB 50,000-watt clear-channel broadcasting from Tijuana with those unmistakable Wolfman airchecks. "Awwww, hey baby, welcome on in here to the Wolfman Jack show for a Tuesday night!"

Produced by big ear music/DCC Compact Classics in 1997, Howlin' on the Air is still available from Amazon.com for \$12.57.

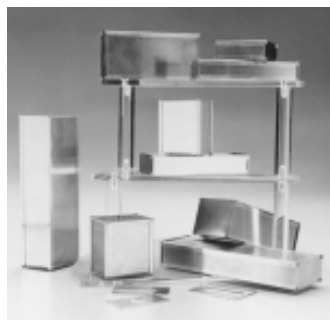
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## Miscellany

- The BC-245 Manual can now be ordered online for \$7.50 at: <http://www.uniden.com/docs/store/accdetail.cfm?item=>

## OWNERSMANUAL

Uniden BC-245 Smartscanner software can be downloaded by customers at <http://www.uniden.com/docs/product/prdetail.cfm?product=BC245XLT#software>

- For those customers who have the Optocom, version 2.1 of the Optocom utility program is available at the Optoelectronics site. It works much better than the previous versions. <http://www.optoelectronics.com/optocom.zip>

- There have been some minor improvements to the AOR AR7030 receiver, says David Zantow. They have changed the rotary tuning dial encoder to a better unit, and the LCD display has been improved for better viewing angle. A kit is available for upgrading the tuning, but not recommended unless someone is experiencing a problem with the original one.

**Books and equipment for announcement or review should be sent to "What's New?" c/o Monitoring Times, P.O. Box 98, 7540 Hwy 64 West, Brasstown, NC 28902**

**Press releases may be faxed to 828-837-2216 or e-mailed to [mtditor@grove-ent.com](mailto:mtditor@grove-ent.com).**

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# LETTERS TO THE EDITOR

NEWS AND VIEWS FROM OUR READERS

Rachel Baughn, Editor

## It Won't Affect Me

"I've been reading for some time about trunking communications systems in your magazine. Until recently, my interest was only of an academic nature ('it won't affect me'). Now, my interest is of a more concrete nature as the nearby City of Philadelphia is considering converting to a [digital] trunking system."

— Donald Strumpf, Bryn Mawr, PA

Donald, you just spoke for hundreds of scanner hobbyists who are having to come to grips with the necessity of buying a new scanner and learning a new way of scanning in order to hear the communications they used to follow. Or, in the case of digital trunked systems, learning to do without hearing them at all.

*Monitoring Times* is planning to restore its coverage of trunking tips and techniques as soon as space becomes available in the magazine. Meanwhile, we hope readers will find the feature article in this issue to be useful in operating their trunk tracking radios.

## Hobbyists not radio freaks

"I started shortwave listening in the 50s and liked it very much. Then came marriage, children and mortgage. In the early 80s I took up shortwave again. I started with *MT* in 1990, when I was going to stop shortwave listening. *MT* gave me what I was looking for and I am still enjoying shortwave thanks to *MT*."

"In Jan 1999 *MT*, 'A Turning Point for International Broadcasting' by John Figliozzi, he asks 'Who is the audience?' I do not think the traditional shortwave listener is a thing of the past. I never had an international shortwave station ask me if I was a hobbyist or a listener. My QSL rate has always run 90 to 95 percent returned and always a thank you for my report."

— Ernest T. Bagley, Sr.

## Whoizzit?

This stumper comes to us from Richard Ashley of Salt Lake City, Utah. "This summer I took a short trip around the state of Utah, photographing and doing some DXing as I camped out in some isolated places along the way."

"On my way to Promontory Summit where the Golden Spike was laid in 1869, I photographed these log periodic antennas about 8 miles west of Corrine, Utah, at the foot of Little Mountain."



In the background is a 'telerana' or spiderweb antenna which is about 75 feet high.

"I made numerous enquiries to the FAA in Salt Lake and to the Air Force in Ogden. I know communications people with both agencies and they disavow any knowledge of the antennas or their use. The antennas are located on property under the jurisdiction of the US Fish and Wildlife Service and located within the boundary of the Locomotive Springs Wildlife Management Area."

"The soil in the area is highly salt laden and thus highly conductive. It is apparent the antennas are in current use and the towers and equipment are maintained. It is also apparent that these are remote transmitter sites. The LPDAs are pointed roughly northeast and northwest."

"The 'telerana' antenna is very similar to one on the grounds of the state Capitol in Salt Lake, which is operated by the state's emergency disaster agency in conjunction with FEMA. However, the people there also know nothing about these antennas. I suspect if they were operated by the federal government in any capacity, they would be more secure with fences around them and locked gates."

"Perhaps a reader can shine some light on the 'mystery.'"

## Great DX

Richard Ashley continues, "The NW corner of the state is extremely sparsely populated and the ground is nearly as conductive as copper, considering the composition is salt. I camped one night on Antelope Island in the middle of the Great Salt Lake and found the DX considerable. I stayed up until 2a.m. listening to stations in Thailand, Turkey, United Arab Emirates, Saudi Arabia, Nigeria, Australia, and Radio Republic of Indonesia!"

"Thailand and Indonesia were stations I had never logged before and the others are still rare and difficult to catch. The second night found me camped at some freshwater springs on the extreme northwestern edge of the salt flats. Again I caught Radio Thailand World Service at 9655 and 11905 kHz at 0130 UTC."

"There is no one living in the area and no electrical lines or manmade interference. It was really amazing how weak a signal can be received on simple equipment (a Sangean ATS

818, some spare batteries, a solar panel, and about 150 feet of antenna wire)."

That's terrific reception—especially considering Richard's trip was in the first part of June! Indonesia—usually considered a wintertime catch—is coming up in our

lineup of DX features; see how your reception compares with monitoring from the salt flats!

## To Scan or Not to Scan in the UK

"Pat, your article couldn't have been published at a more opportune time," says Monte Carroll via email to Pat Martindale, author of the July article on the radio hobby in the UK. "My wife and I will be visiting Ireland in October. We'll have much to do, so I probably won't be bringing my scanner. But, just in case, are the UK scanner laws you wrote of applicable to Ireland and Northern Ireland as well?"

Well, Monte, you might be all right if you don't post your scanning activities on the internet while you're in Ireland. An *MT* reader sent us an article from an Irish publication about "Bandit," a scanner buff who published the frequencies and radio codes for Garda, Ireland, on his website.

As in this country, there is a certain muddiness between what may be published and what is permissible to monitor. Garda's politicians and representative association were outraged and demanded the website be removed; the internet provider at first said it had no authority to remove the files, saying, "preliminary legal advice suggested that it wasn't illegal to publish [the material] but it was illegal to use."

The material was ultimately removed.

Another *MT* subscriber (who we assume would like to remain anonymous), recently wrote this along with his renewal: "Today I received my *Monitoring Times* in a transparent envelope and not in an opaque one like before. Maybe you don't know, but in Belgium, scanners, etc... are STRICTLY forbidden. I live in a large building and magazines are half out of the post box in view of every neighbor. So, if you cannot guarantee me 100% that the next issue will come in a OPAQUE envelope, please cancel my subscription when it arrives."

Unfortunately, that's what we had to do; we recently changed our overseas shipper because the new one was much more cost-effective—but they do ship in a clear plastic bag. But stayed tuned: readers with internet access may soon have a cost-effective alternative ...

## But where can you get the Kloss?

"Gee, seems I left out the critical where-to-get-this-product info!" says Ken Reitz after several readers asked where they could get the Kloss Model 8 radio he reviewed in the July issue. "As far as I know the only way to buy it is direct via the Cambridge Soundworks site ([www.hifi.com](http://www.hifi.com)). You can also call 1-800-FOR-HIFI (800-367-4434) or email [info@hifi.com](mailto:info@hifi.com) for more info or to order. Unfor-

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tunately, their web site says the \$199.95 introductory price is going up to \$249.95 September 1st.

Henry Kloss is a co-founder of Cambridge Soundworks. Corporate address is 311 Needham Street, Newton, MA 02464.

### Correction

"In case no one has pointed it out," says Bob Grove, "in the July issue, page 78, second column, the Navy's Project ELF transmits on

76 Hz, not 0.76 Hz as shown."

Oops — What a difference a decimal makes! Fortunately, author Kevin Carey had clarified the figure by adding "less than 1 kHz," which may be why we didn't get more mail on the goof.

**Your letters and comments are welcome at Letters to the Editor, P.O. Box 98, Brasstown, NC 28902, or email to [mteditor@grove-ent.com](mailto:mteditor@grove-ent.com).**



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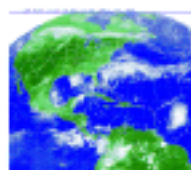
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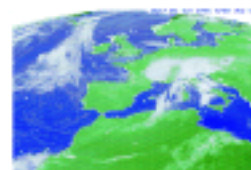
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By Bob Grove,  
Publisher

## The Results Are In – How Do You Measure Up?

Statistics can be useful, misleading, frightening, reassuring, or meaningless depending upon how validly they were measured and how accurately they are interpreted. Recently, Grove Enterprises conducted a profile poll of radio hobbyists; some 1700 responses came back. We entered the data into our computer (that's the frightening part!) and tallied the results (hopefully, that's the accurate part!). Such statistics are very useful to publishers and advertisers to be sure they are on track, meeting the needs and desires of their clientele.

We randomly sampled close to 200 entries, sufficient to screen the typical responses; the others are held for future refinement. Let's take a look at what we discovered and, at the same time, you can see whether your profile is similar to others who responded. I think you will be as surprised as we were at some of the findings:

All in our random sample are men, 80% are over 45 years of age, and none are minors. 86% are college graduates and more, with none of you presently in school, government jobs, or military services. The majority of you are either retired (28%), in a professional position (24%), or technicians (14%). 64% of you live alone or with one more person, with only 4% having a large family (five or more).

46% of your families combine their incomes for at least \$50,000 per year, but none earn as much as \$100,000; the rest are evenly distributed under \$50,000. You purchase by mail order (88%), mostly buying radio equipment (74%), computers (32%), and automotive accessories (22%). Radio is your hobby (86%), not your profession (14%).

When you purchase, you do it by credit card (62%), check (28%), or money order (10%), but not by C.O.D. You bought less than \$1000 in equipment last year (70%) and plan to spend less than \$500 next year on your hobby (68%).

You often take radio with you vacationing and traveling (52%), as well as camping, boating, air shows, camping, hunting, and hiking (20%).

46% of you are licensed amateur radio operators, and 68% have been in the monitoring hobby for more than 15 years. You listen at least 4 hours – and probably more than 8 hours – per week (98%). You belong to a radio club (50%), and regularly read radio hobby publications (*Monitoring Times* 82%, *Popular Communications* 50%, *QST* 36%, *CQ* 20%, *Amateur Radio Trader*

16%, *Worldradio* 12%, 73 10%, and *Scanning USA* 4%). 64% of you subscribe to *Monitoring Times* rather than buy it from a newsstand (14%), and the majority of you (57%) are long-time readers (more than five years).

You may share your copy of *Monitoring Times* with one or two others (34%), but usually you don't (44%). And after reading *MT*, 56% of you buy products from advertisers, while 42% called the advertiser for more information, and 36% discussed the products seen in *MT* with other potential customers. You would like to see more ads about receivers (40%), antennas (36%), and accessories (36%) – and maybe some software (20%) and books (18%).

Your major monitoring interests are evenly divided between shortwave broadcasting (82%) and scanning (80%), with roughly one-third interested in military, aeronautical, weather, Internet, and commercial broadcasting (AM/FM/TV). CB (22%) and maritime (20%), beat out pirate broadcasts (16%), Family Radio Service/GMRS (16%), and satellite monitoring (9%).

Internet is now part of your life (64%), and you spend 4-10 hours per week on it (28%), but you don't want to get sales announcements on your e-mail (64% no) unless you ask (36% yes).

Only 8% of you are actively concerned about the Y2k issue. You are likely to be using your computer as an adjunct to your radio hobby (61%), primarily for Internet information (67%) and database records (29%), but not for radio control (0%).

This information is of great value, both to our editorial staff in the preparation of articles of greatest interest to you, as well as to our advertising personnel to alert you to exciting, new products as they become available. Thank you for your help in its preparation.



**P**

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